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PATENTS

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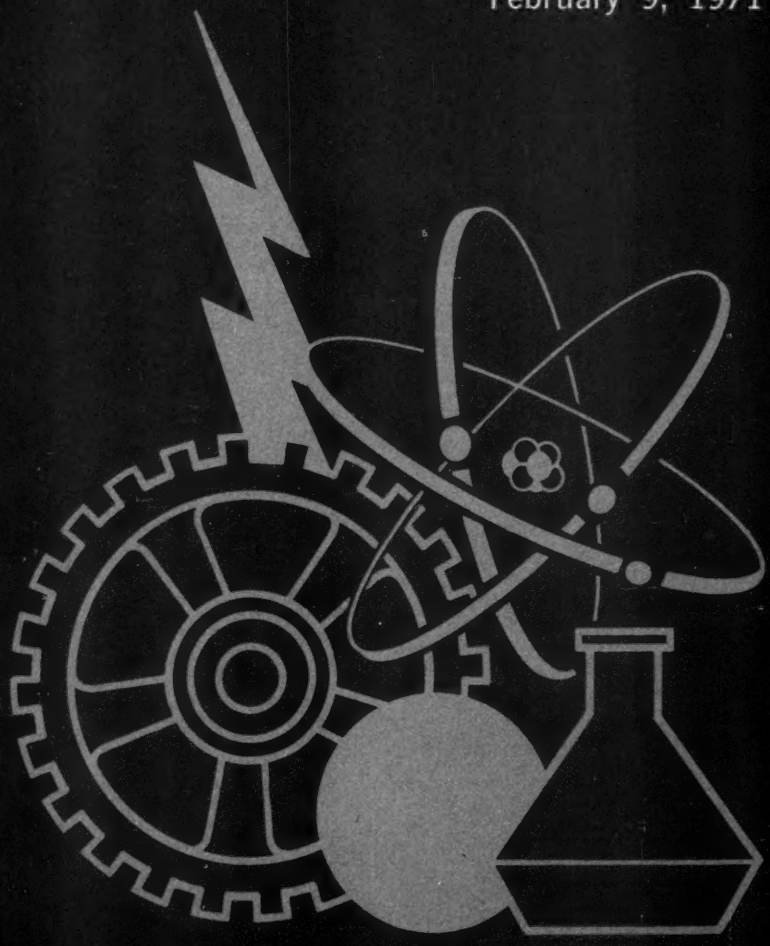

U. S. DEPARTMENT OF COMMERCE

Patent Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

February 9, 1971 Volume 883 Number 2

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PATENT OFFICE NOTICES

Recognition of Attorneys and Agents and Standards of Conduct

[37 C.F.R. Parts 1 and 2]

Notice is hereby given that, pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6) and section 31 of that Act (66 Stat. 795; 35 U.S.C. 31), the Patent Office proposes to amend Title 37 of the Code of Federal Regulations by revoking §§ 1,35 and 1.61 and by amending §§ 1.14, 1.21, 1.33, 1.34, 1.36, 1.51, 1.52, 1.57, 1.76, 1.341, 1.343, 1.344, 1.346, 1.347, 2.13, and 2.15 as set forth below.

All persons are invited to present their views, objections, recommendations, or suggestions in connection with the proposed changes to the Commissioner of Patents, Washington, D.C. 20231, on or before March 23, 1971, on which date a hearing will be held at 9:00 a.m., e.s.t. in Room 8C06, Building 2, 2011 Jefferson Davis Highway, Arlington, Virginia. All persons wishing to be heard orally at the hearing are requested to notify the Commissioner of Patents of their intended appearance. Any written comments or suggestions may be inspected by any person, upon written request, a reasonable time after the closing date for submitting comments.

The proposed revocations and amendments eliminate present provision for the recognition and registration of firms of attorneys and agents for practice in patent and trademark cases, and would permit registered attorneys and agents to file papers in patent applications without the need for filing powers of attorney or authorizations. The proposed amendments to §§ 1.344 and 2.13 refer to the Code of Professional Responsibility of the American Bar Association as the standard of conduct for those practicing before the Patent Office insofar as not inconsistent with Patent Office rules. The revocation of § 1.61 and amendment of other sections referring to the petition eliminate the present requirement for a petition or other express request for a patent.

The amendments are intended to eliminate complications incident to the registration and recognition of firms and to emphasize individual professional responsibility in practice before the Patent Office. Acceptance of papers filed in patent applications by registered attorneys and agents upon a representation that the attorney or agent is authorized to act in a representative capacity is intended to facilitate responses on behalf of applicants in patent applications and, further, to obviate the need for filing powers of attorney or authorizations of agent in individual applications when there has been a change in composition of law firms or corporate patent staffs. Interviews with a registered attorney or agent not of record will, in view of 35 U.S.C. § 122, be conducted only on the basis of information and files supplied by the attorney or agent.

Provision is made for an applicant to supply an address to receive correspondence from the Patent Office concerning his application, in addition to his residence address, so that the Patent Office may direct mail to any address of applicant's selection, such as a corporate patent department or an attorney, agent, or other person. In connection with patent applications pending upon the effective date of the proposed changes in which a firm is the only representative of record (and in connection with divisions and continuations thereof not requiring execution by the applicant), the address of the firm will be considered to be the correspondence address for the application.

The amendments to §§ 1.344 and 2.13 are intended to provide a more definite and uniform standard of conduct for registered attorneys and agents than do the present rules. The elimination of the requirement for a petition is in the interest of simplification, inasmuch as a request for a patent is deemed implicit in the submission of the other application papers in compliance with the statute and rules.

Changes in the forms in Part 3, 37 C.F.R., consonant with the proposed revocations and amendements will be made as part of a general revision of that part now in preparation.

The text of the proposed amended sections is as follows:

§ 1.14. *Patent applications preserved in secrecy.*

(a) Except as provided in section 1.11(b) pending patent applications are preserved in secrecy. No information will be given by the Office respecting the filing by any particular person of an application for a patent, the pendency of any particular case before it, or the subject matter of any particular application, nor will access be given to or copies furnished of any pending application or papers relating thereto, without written authority in that particular application from the applicant or his assignee or attorney or agent of record, unless it shall be necessary to the proper conduct of business before the Office or as provided by this part.

§ 1.21. *Patent and miscellaneous fees and charges.*

* * * * *

(h) For registration of an attorney or agent:

For admission to examination for registration to practice, fee payable upon application	$35.00
On registration to practice	25.00

§ 1.33. *Correspondence respecting patent applications and Proceedings.*

(a) The residence and post office address of the applicant must appear in the oath or declaration if not stated elsewhere in the application. The applicant may also specify a correspondence address to which communications about his application are to be directed. All notices, official letters, and other communications in the case will be sent to the correspondence address or, if no such correspondence address is specified, to the attorney or agent of record (see § 1.34(b)), or, if no attorney or agent is of record, to the applicant, or to the assignee of the entire interest if the applicant or such assignee so requests, or to the assignee of an undivided part if the applicant so requests, at the post office address of which the Office has been notified in the case. Amendments and other papers filed in the application must be signed by the applicant, or if there is an assignee of an undivided part interest, by the applicant and such assignee, or if there is an assignee of the entire interest, by such assignee, by an attorney or agent of record, or by a registered attorney or agent not of record who acts in a representative capacity under the provisions of § 1.34(a). Double correspondence with an applicant and his attorney or agent, or with two representatives, will not be undertaken. If more than one attorney or agent be made of record and a correspondence address has not been specified, correspondence will be held with the one last made of record.

(b) An applicant who has not made of record a registered attorney or agent may be required to state whether he received assistance in the preparation or prosecution of his application, for which any compensation or consideration was given or charged, and if so, to disclose the name or names of the person or persons providing such assistance. This includes the preparation for the applicant of the specification and amendments or other papers to be filed in the Patent Office, as well as other assistance in such matters, but does not include merely making drawings by draftsmen or stenographic services in typing papers.

§ 1.34. *Recognition for representation.*

(a) When a registered attorney or agent acting in a representative capacity appears in person or signs a paper in practice before the Patent Office in a patent case, his personal appearance or signature shall constitute a representation to the Patent Office that, under the provisions of this part and the law, he is authorized to represent the particular party in whose behalf he acts. In filing such a paper, the attorney or agent should specify his registration number with his signature. Further proof of authority to act in a representative capacity may be required. (b) Before any attorney or agent, original or associate, will be allowed to inspect papers in any application or proceeding, a written power of attorney or authorization from the person or persons entitled to grant access to the application under § 1.14(a) or from the principal attorney or agent of record in the case of an associate attorney or agent, must be filed in that particular application or proceeding. When an attorney or agent shall have filed his power

of attorney, or authorization, duly executed by the person or persons entitled to grant access to the application under § 1.14(a), he is of record in the case.

§ 1.35. *Correspondence held with attorney.* [Revoked]

§ 1.36. *Revocation of power of attorney or authorization; Withdrawal of attorney or agent.*

A power of attorney or authorization of agent may be revoked at any stage in the proceedings of a case, and an attorney or agent may withdraw, upon application to and approval by the Commissioner. An attorney or agent, except an associate attorney or agent whose address is the same as that of the principal attorney or agent, will be notified of the revocation of his power of attorney or authorization and the applicant will be notified of the withdrawal of the attorney or agent. An assignment will not of itself operate as a revocation of a power or authorization previously given, but the assignee of the entire interest may revoke previous powers and be represented by an attorney or agent of his own selection.

§ 1.51. *General requisites of an application.*

Applications for patents must be made to the Commissioner of Patents. A complete application comprises:

(a) A specification, including a claim or claims, see §§ 1.71 to 1.77.

(b) An oath or declaration, see § 1.65.

(c) Drawings, when necessary, see §§ 1.81 to 1.88.

(d) The prescribed filing fee. (See § 1.21 for filing fees.)

§ 1.52. *Language, paper, writing, margins.*

(a) The specification and oath or declaration must be in the English language. All papers which are to become a part of the permanent records of the Patent Office must be legibly written or printed in permanent ink.

* * * * *

§ 1.57. *Signature.*

The application must be signed by the applicant in person. The signature to the oath or declaration will be accepted as the signature to the application provided the oath or declaration is attached to and refers to the specification and claim to which it applies. Full names must be given, including the full first name without abbreviation, and the middle initial or name if any.

§ 1.61. *Petition.* [Revoked]

§ 1.76. *Signature to the specification.*

When the oath or declaration is attached to and refers to the specification and claim to which it applies, the specification need not be signed. Otherwise it must be signed by the applicant in person.

§ 1.341. *Registration of attorneys and agents.*

* * * * *

(d) *Registration of firms.* [Revoked]

* * * * *

§ 1.343. *Persons not registered or recognized.*

No person not registered or given limited recognition as provided in § 1.342 will be permitted to prosecute applications of others before the Patent Office.

§ 1.344. *Professional conduct.*

Attorneys and agents appearing before the Patent Office must conform to the standards of ethical and professional conduct set forth in the Code of Professional Responsibility of the American Bar Association insofar as such Code is not inconsistent with this part.

§ 1.346. *Signature and certificate of attorney.*

Every paper filed by an attorney or agent representing an applicant or party to a proceeding in the Patent Office must bear the signature of such attorney or agent, except papers which are required to be signed by the applicant or party in person (such as the application itself and affidavits or declaration required of applicants). The signature of an attorney or agent to a paper filed by him, or the filing or presentation of any paper by him, constitutes a certificate that the paper has been read; that its filing is authorized; that to the best of his knowledge, information, and belief, there is good ground to support it; and that it is not interposed for delay.

§ 1.347. *Removing names from registers.*

Attorneys and agents, registered to practice before the Patent Office, should notify the Office of any change of address for entry on the register, by letter separate from any notice of change of address filed in individual applications. The Office may address a letter to any person on the registers, at the address of which separate notice for the register was last received, for the purpose of ascertaining whether such person desires to remain on the register. The name of any person failing to reply and give the information requested within a time limit specified will be removed from the register, and the names so removed published in the OFFICIAL GAZETTE. Any name so removed may be reinstated, either on the register of attorneys or the register of agents, as may be appropriate.

§ 2.13. *Professional conduct.*

Attorneys and other persons appearing before the Patent Office in trademark cases must conform to the standards of ethical and professional conduct set forth in the Code of Professional Responsibility of the American Bar Association insofar as such Code is not inconsistent with this part.

§ 2.15. *Signature and certificate of attorney or agent.*

Every paper filed by an attorney at law or other person representing an applicant or party to a proceeding in the Patent Office must bear the signature of such attorney at law or other person except those papers which are required to be signed by the applicant or party. The signature of an attorney at law or such other person to a paper filed by him, or the filing of any paper by him, constitutes a certificate that the paper has been read; that its filing is authorized; that to the best of his knowledge, information, and belief there is good ground to support it; and that is is not interposed for delay.

(b) [Revoked].

(c) [Revoked].

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Approved: Jan. 12, 1971.

RICHARD O. SIMPSON,
Acting Assistant Secretary for Science and Technology.

[F.R. Doc. 71-567; Filed 1-14-71; 8:49 a.m.]

Published in 36 F.R. 611, Jan. 15, 1971

Registers of Attorneys and Agents

In the October 20, 1970, issue of the OFFICIAL GAZETTE, volume 879, number 3, there was published a list of names and addresses of persons whose names were being removed from the Registers of Patent Attorneys and Patent Agents pursuant to the provisions of Rule 347 of the Rules of Practice of the United States Patent Office in Patent Cases.

The following persons, whose names appeared in that list have been retained on the active Register of Attorneys or Register of Agents in view of information which they have furnished the Committee on Enrollment.

ROBERT GOTTSCHALK,
Jan. 8, 1971. *Chairman, Committee on Enrollment.*

Akers, Alan D., TRW Systems Group, TRW Inc., Bldg. E-2, Rm. 8015, One Space Park, Redondo Beach, Calif. 90278
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Burnside, Michael, 10 E. 40th St., Suite 3710, New York, N.Y. 10016
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Kissane, John J., General Electric Co., 1 River Road, Rm. 106, Schenectady, N.Y. 12305
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Ruege, John H., 162 Grove Place, Freehold, N.J. 07728
Schiavo, Louis V., The Fidelity Bldg., Suite 1020, 123 S. Broad St., Philadelphia, Pa. 19109
Schulte, Neil B., E. 1402 First National Bank Bldg., Fourth & Robert, St. Paul, Minn. 55102
Shane, Charles N. Jr., The Anaconda Co., 25 Broadway, New York, N.Y. 10004
Smith, Delavan P., 160 Broadway, New York, N.Y. 10038
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Tabak, Gary, 151 Duddington Place SE., Washington, D.C. 20003
VanDenburgh, Howard F., Gulf Oil Corp., 610 Dwight Bldg., Kansas City, Mo. 64105
Washburn, R. S., The Goodyear Tire & Rubber Co., 1144 E. Market St., Akron, Ohio 44316
Wells, Charles C. Jr., NASA, George C. Marshall Space Flight Center, Marshall Space Flight Center, Ala. 35812

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,544,246, G. H. Butterfield, CORNEAL CONTACT LENS, **filed** Mar. 9, 1970, D.C., E.D. Mo. (St. Louis), Doc. 70C105(3), *George H. Butterfield, Sr.* v. *Alvin Contact Lens Corporation.* Transferred to the Northern Dist. of Illinois, Apr. 17, 1970. **Same, filed** Feb. 16, 1970, D.C., S.D.N.Y. Doc. 70C640, *George H. Butterfield, Sr.* v. *Tru Form Contact Lens.* Notice of voluntary dismissal, May 1, 1970. **Same, filed** Feb. 16, 1970, D.C., S.D.N.Y., Doc. 70C642, *George H. Butterfield, Sr.* v. *Rynco Scientific Corp.* Apr. 7, 1970, case transferred to U.S.D.C., Northern Dist. of Ill. for coordinated hearings. Stipulation of Northern Dist. of Ill., Eastern Div. dismissing action, June 17, 1970. **Same, filed** Feb. 16, 1970, D.C., S.D.N.Y., Doc. 70C633, *George H. Butterfield, Sr.* v. *Professional Contact Lens Service.* Apr. 10, 1970, case transferred to U.S.D.C. Northern Dist. of Ill., Chicago. Notice of voluntary dismissal, July 13, 1970.

2,703,579, Mercancy and Welsz, AUTO CAR WASHING MACHINE, **filed** Aug. 17, 1970, D.C., E.D. Ill. (Chicago), Doc. 70c2024, *California Car Wash Systems, Inc.* v. *Motor Valet Industries, Inc.* **Same, filed** Sept. 2, 1970, D.C., W.D.N.Y. (Buffalo), Doc. C-1970-390, *California Car Wash Systems, Inc.* v. *Miton Car Wash Equipment, Inc.* **Same, filed** Sept. 29, 1970, D.C., C.D. Calif. (Los Angeles), Doc. 70-2204-EC, *California Car Wash Systems, Inc.* v. *Sherman Car Wash Equipment Co. et al.* **Same, filed** Oct. 30, 1970, D.C., M.D. Pa. (Scranton), Doc. C-70-538, *California Car Wash Systems, Inc.* v. *Bernardi Bros., Inc.* **Same, filed** Nov. 4, 1970, D.C., M.D.N.C. (Greensboro), Doc. C-244-WS-70, *California Car Wash Systems, Inc.* v. *Champion Dishwashing Machine Co.*

2,738,995, Risley and Hoke, PIPE COUPLING WITH MULTIPART CLAMP, **filed** Aug. 20, 1965, U.S. Ct. of Cl., Doc. 294-65, *Dresser Industries, Inc.* v. *The United States, Defendant; R. H. Baker & Company, Inc., Graver Tank and Manufacturing Co., and Western-Knapp Engineering Company, Third-Party Defendants.* Opinion, claims 1, 2 and 6 of said patent, which are the only claims now at issue in this case, are not infringed and the petition is dismissed, decided Oct. 16, 1970.

2,742,327, T. Marks, FULLY AUTOMATIC MACHINE FOR MAKING BRUSHES, **filed** Oct. 6, 1970, D.C., S.D.N.Y., Doc. 70-C-4312, *American Technical Industries, Inc.* v. *Premier Decorations, Inc. et ano.*

2,790,978, J. B. Tigrett. COLLAPSIBLE PLAY PEN AND THE LIKE; **2,990,190,** L. A. Eriksen, INFANT STROLLER AND CHAIR SUPPORT UNIT, **filed** Nov. 29, 1965, D.C. Del. (Wilmington), Doc. 3121, *Standard Industries Inc.* v. *Tigrett Industries Inc.* Order of dismissal, with prejudice, Nov. 3, 1970.

2,836,344, H. F. Gatward, CARRIER BAGS, **filed** Mar. 27, 1970, D.C., S.D.N.Y., Doc. 70-C-1247, *Imperial Packaging Corp.* v. *Bahamas Paper Co., Ltd.* Notice of voluntary dismissal, Sept. 23, 1970.

2,990,190. (See 2,790,978.)

3,172,289, S. N. Blackman, GLASS THERMOMETER; **3,316,076,** same, METHOD OF MARKING MERCURY GLASS THERMOMETERS, **filed** Oct. 20, 1970, D.C., E.D.N.Y. (Brooklyn), Doc. 69-C-595 (Reinstated), *Seymour N. Blackman et al.* v. *Hadron Inc.*

3,203,670, W. A. Farris, deceased, by T. D. Farris, executrix, DOUBLE LINKAGE SUPPORTED TABLE, **filed** Oct. 30, 1970, D.C., W.D. Wash. (Seattle), Doc. 9305, *American Manufacturing Company, Inc.* v. *Nordick Manufacturing Co.*

3,250,571, R. Richter, NONFERROUS WHEEL HAVING STEEL INSERTS AND STEEL RIM WELDED THERETO; **3,250,572,** J. A. Walker, same; **3,302,273,** Benton and Bennett, METHOD OF MAKING COMPOSITE VEHICLE WHEEL; **3,399,930,** J. C. Bennett, COMPOSITE VEHICLE WHEEL AND METHOD OF MAKING THE SAME; **3,410,606,** Benton and Bennett, same, **filed** Oct. 28, 1970, D.C., C.D. Calif. (Los Angeles), Doc. 70-2428, *Roy Richter, Inc., doing business as Crager Industries* v. *Rocket Wheel Industries, Inc. et al.*

3,250,572. (See 3,250,571.)

3,251,234. (See Re. 25,834.)

3,302,273. (See 3,250,571.)

3,316,076. (See 3,172,289.)

3,331,184, G. Kraus, CASE PACKING APPARATUS, **filed** Nov. 12, 1968, D.C., N.D. Calif. (San Francisco), Doc. 50288, *Gustav Kraus, doing business as Condor Machine Works* v. *Emhart Corp. et al.* Plaintiff's patent is invalid and unenforceable; action and complaint dismissed, Oct. 22, 1970.

3,343,961, H. Truax, METHOD FOR TREATING SOYBEANS AND THE LIKE USING INFRA-RED HEAT; **3,368,475,** same, MACHINE FOR TREATING SOYBEANS AND THE LIKE, **filed** Oct. 23, 1970, D.C., S.D. Iowa (Des Moines), Doc. 10-134-C-2, *Mix-Mill, Inc. and Harry Truax & Sons Company, Inc.* v. *Evans Systems and Stanley Evans.* **Same, filed** Oct. 26, 1970, D.C. Minn. (St. Paul), Doc. 2-70-296, *Mix-Mill, Inc. and Harry Truax & Sons Company, Inc.* v. *Rosoi Corporation and George Besse.* **Same, filed** Oct. 29, 1970, D.C., N.D. Ill. (Freeport), Doc. 70c63, *Mix-Mill, Inc. and Harry Truax & Sons Co., Inc.* v. *Agri-King, Inc.*

3,344,258, L. S. Michels, MATCHING IDENTIFICATION SYSTEM, **filed** Oct. 21, 1970, D.C., C.D. Calif. (Los Angeles), Doc. 70-2379-AAH, *TRW Data Systems* v. *Credit Systems, Inc.*

3,368,475. (See 3,343,961.)

3,399,930. (See 3,250,571.)

3,410,606. (See 3,250,571.)

3,417,587, G. L. Campbell, SPIRAL PIPE MACHINE, **filed** Sept. 11, 1970, D.C., N.D. Calif. (San Francisco), Doc. C70-1963-OJC, *Pacific Roller Die Co., Inc.* v. *Garland Steel Company.*

3,425,841, Handwerk and Allen, PINEAPPLE-GRAPEFRUIT FRUIT JUICE BLEND, **filed** Oct. 15, 1970, D.C., N.D. Calif. (San Francisco), Doc. C-70-2232, *Del Monte Corporation* v. *Castle & Cooke, Inc.*

3,428,194, F. C. Weiss, SHIP BARGE HANDLING CRANES AND BEAMS, **filed** Apr. 24, 1970, D.C., N.D. Ohio (Cleveland), Doc. C70–384, *United Industrial Syndicate, Inc.* v. *Alliance Machine Company.* Consent judgment; patent not infringed; counterclaim dismissed, Oct. 27, 1970.

3,473,251, R. D. Kahn, INSECT ELECTROCUTING DEVICE, **filed** Jan. 22, 1970, D.C., S.D.N.Y., Doc. 70–275, *Fedtro Inc.* v. *Chadwick-Miller et al.* Case transferred to U.S.D.C., District of Massachusetts, May 20, 1970.

3,495,629, Botsolas and Lionikis, METHOD AND DEVICE FOR COVERING PIPE FITTINGS, **filed** June 8, 1970, D.C., C.D. Calif. (Los Angeles), Doc. 70–1166–FW, *Chris J. Botsolas* v. *Schultz Laboratories et al.*

Re. 25,834, Gelzer and Reed, ADJUSTABLE INDUCTANCE UNIT; **3,251,234,** A. A. Valdettaro, VHF-UHF TELEVISION TUNER, **filed** Jan. 7, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c22, *Sarkes Tarzian, Inc.* v. *ALPS Electric Co., Ltd. et al.* Agreement order, dismissed without prejudice, Oct. 19, 1970.

Certificates of Correction for the Week of Feb. 9, 1971

D. 219,322	3,513,517	3,535,903	3,540,499
3,357,969	3,516,933	3,536,460	3,540,595
3,393,088	3,521,596	3,536,647	3,540,668
3,409,017	3,522,147	3,536,816	3,541,140
3,441,324	3,522,158	3,536,925	3,541,289
3,469,529	3,525,780	3,537,298	3,541,324
3,469,671	3,526,562	3,537,525	3,542,417
3,469,691	3,526,578	3,537,574	3,542,530
3,476,606	3,527,084	3,537,642	3,542,656
3,482,493	3,527,808	3,537,700	3,542,769
3,485,869	3,528,186	3,538,056	3,542,946
3,488,394	3,529,458	3,538,157	3,542,976
3,488,502	3,530,330	3,538,387	3,543,068
3,489,589	3,531,101	3,538,583	3,543,154
3,493,662	3,531,724	3,538,714	4,543,551
3,498,540	3,533,353	3,538,788	3,543,815
3,503,156	3,533,939	3,538,896	3,544,308
3,504,010	3,534,074	3,539,558	3,544,315
3,507,803	3,534,127	3,539,563	3,544,751
3,508,312	3,534,410	3,539,596	3,544,811
3,510,363	3,534,953	3,539,955	3,545,007
3,512,039	3,535,682	3,540,103	

Dedication

3,376,868.—*Dimitri G. Mondiadis,* New York, N.Y. SURGICAL EVACUATOR DEVICE. Patent dated Apr. 9, 1968. Dedication filed Sept. 10, 1970, by the assignee, *Howmedica, Inc.*

Hereby dedicates the entire term of the patent to the Public.

Disclaimer

3,407,334.—*Oliver G. Attewell,* South Milwaukee, Wis. STARTING AND OPERATING CIRCUIT FOR ARC DISCHARGE LAMPS REQUIRING A HIGH STARTING VOLTAGE. Patent dated Oct. 22, 1968. Disclaimer filed Nov. 2, 1970, by the assignee, *McGraw-Edison Company.*

Hereby enters this disclaimer to claims 3, 4, 5 and 6 of said patent.

Patents Available for Licensing or Sale

3,241,172. CHANCE SELECTIVE RACING GAME. Walter Williams, 208–14 100th Ave.,Bellaire, Queens, New York, N.Y., 11429.

3,432,935. INTERNAL THREAD GAUGE. Percy J. Relsh, 1807 Fox St., #202, West Hyattsville, Md., 20783.

3,532,142. SCREWDRIVER GUIDE ASSEMBLY. Harold B. Ziegler, 8723 Magnetic, El Paso, Tex., 79904.

3,532,350. REINFORCING SEAL. Frank L. Kaufman. Correspondence to: Marechal, Biebel, French & Bugg, Winters Bank Bldg., Dayton, Ohio, 45402.

3,536,234. APPARATUS FOR EXPELLING THE CONTENTS OF COLLAPSIBLE TUBE CONTAINERS. Leif Rise, 735 N. Eucalyptus Ave., Inglewood, Calif., 90302.

3,541,707. EDUCATIONAL DEVICE. Littleton C. Billingsley, Brookeland, Tex. Correspondence to: Bill B. Berryhill, P.O. Box 66026, Houston, Tex., 77006.

3,545,101. EDUCATIONAL GAME BOARD. Mary L. Fike, Lakeland, Fla. Correspondence to: Morton, Bernard, Brown, Roberts & Sutherland, 1054 31st St., NW., Washington, D.C., 20007.

3,548,437. MACHINE FOR WASHING MOTOR CARS. Charles T. Anderson, 2516 Woodford St., Shreveport, La., 71108.

3,556,307. DRAFTING MACHINE CADDY. D. M. Brownson, 10808 62nd St., Temple Terrace, Fla., 33617.

The following 2 patents are offered by: George C. Coverston, 1258 High St., Auburn, Calif., 95603.

3,225,539. EXPLOSION INERTIA TURBINE ENGINE.

3,325,975. CARBURETOR.

The following 3 patents are offered by John W. Barnd, 32 Hollybrook Road, Paramus, N.J.

3,351,128. MULTI-ZONE TEMPERATURE CONTROL.

3,496,991. FLUID TEMPERATURE REGULATING METHOD AND APPARATUS.

3,515,345. MULTI-ZONE TEMPERATURE CONTROL.

The following 5 patents are offered by: Theodore S. Miller, Trustee, 919 Blaustein Bldg., Baltimore, Md., 21201.

3,212,173. APPARATUS FOR APPLYING CURVED DIP TUBED CLOSURES TO CONTAINERS.

3,212,174. INLINE APPARATUS FOR ASSEMBLING FLEXIBLE CURVED DIP TUBED CLOSURES TO CONTAINERS.

3,212,175. ROTARY APPARATUS FOR CONTINUOUSLY ASSEMBLING FLEXIBLE CURVED DIP TUBED CLOSURE ASSEMBLIES TO CONTAINERS.

3,260,403. APPARATUS FOR SELECTING AND ALIGNING RANDOM ARTICLES.

3,360,844. APPLICATOR CLOSURE INSERTING MACHINE.

Otto Wohr of Stuttgart, Germany, is prepared to grant exclusive or non-exclusive license on reasonable terms and conditions under the following patent.

Inquiries should be addressed to: George V. Caldwell & Associates, 236 Adelaide Drive, Santa Monica, Calif. 90402.

3,437,217. DOUBLE-TIER GARAGE.

Eastman Kodak Company announces that, in accordance with its policy, nonexclusive licenses upon reasonable terms (under the circumstances prevailing at the time) are available to responsible domestic applicants under the following U.S. patent.

3,165,038. COMPENSATING DEVICE FOR PHOTOGRAPHIC CAMERAS.

This offer is consistent with the present practice of Eastman Kodak Company to grant such nonexclusive licenses for any of its unexpired United States patents on photographic inventions issued prior to 1966 and on inventions made in the course of research or development work for the U.S. Government.

Applications for license may be addressed to the Director, Patent Department, Eastman Kodak Company, 343 State St., Rochester, N.Y., 14650.

General Motors Corporation is prepared to grant a nonexclusive license under the following patent upon reasonable terms.

Applications for license may be addressed to: The Director, Patent Section, General Motors Building, 3044 W. Grand Blvd., Detroit, Mich., 48202.

3,411,794. COOLED SEAL RING.

General Electric Company is prepared to grant non-exclusive licenses under the following 44 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following patent may be addressed to: Patent Counsel, Apollo Systems, General Electric Company, P.O. Box 2500, Daytona Beach, Fla., 32015.

3,479,257. METHOD AND APPARATUS FOR MEASURING THE CONTENT OF HYDROGEN OR REDUCING GASES IN AN ATMOSPHERE.

Applications for license under the following patent may be addressed to: Division Patent Counsel, Space Division, General Electric Co., P.O. Box 8555, Philadelphia, Pa., 19101.

3,538,356. ENERGY CONVERTER.

Applications for license under the following 4 patents may be addressed to: Patent Counsel, Communication and Control Devices Department, General Electric Company, Waynesboro, Va., 22980.

2,780,752. SEMI-CONDUCTOR NETWORK.

2,820,152. SEMI-CONDUCTOR NETWORK.

2,977,523. CONTROL CIRCUIT.

3,404,327. CONVERSION SYSTEMS COMPRISING SCR'S WITH GATE CONTROL ARRANGEMENTS.

Applications for license under the following 4 patents may be addressed to: Division Patent Counsel, Power Transmission Div., General Electric Co., 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,176,212. DIRECT CURRENT POWER SUPPLIES.

3,450,928. GAS-FREE VACUUM GAP DEVICES AND METHOD OF PREPARATION THEREOF.

3,527,910. POLYPHASE VACUUM TYPE CIRCUIT BREAKER.

3,532,842. SWITCH ACTUATING AND CONTROL MECHANISM FOR VACUUM TYPE ELECTRIC CIRCUIT INTERRUPTERS WITH LOST MOTION AND BELLOWS BIASING MEANS.

Applications for license under the following 7 patents may be addressed to: Patent Counsel, LSTG-I & MT Divisions, General Electric Company, 1 River Road, Bldg. #28, Schenectady, N.Y., 12305.

3,244,601. DISTILLATION APPARATUS.

3,291,704. DISTILLATION APPARATUS.

3,403,891. FULL ARC/PARTIAL ARC ADMISSION USING CONTROL VALVES.

3,519,024. DEVICE FOR THE PREPATTERNED CONTROL OF FLOW DISTRIBUTION AND FLUID FLOW EXPERIENCING A CHANGE IN AREA AND/OR DIRECTION.

3,527,546. TIE PINS FOR TURBINE BUCKETS.

3,531,653. MULTIPHASE GENERATOR AND BUS SYSTEM.

3,531,667. LOW FREQUENCY STATOR FRAMES FOR DYNAMOELECTRIC MACHINES.

Applications for license under the following 27 patents may be addressed to: Manager—Patent and Technology Marketing Operation, General Electric Company, 1 River Road, Schenectady, N.Y., 12305.

3,124,719. SURFACE COMBUSTION APPARATUS FOR FLAME CHARGING.

3,149,936. ELECTROSTATIC PRECIPITATOR.

3,250,060. ELECTROSTATIC PRECIPITATOR.

3,330,960. FLAME SPECTROMETER USING IONIZATION CURRENT DETECTION.

3,366,564. ELECTROHYDRAULIC PROCESS.

3,411,123. PYROLYTIC GRAPHITE ELECTRICAL RESISTANCE ELEMENT.

3,412,324. OPTICAL MAGNETOMETER BASED ON THE PRINCIPLE OF FRUSTRATED TOTAL INTERNAL REFLECTION OF LIGHT.

3,417,328. IN-CIRCUIT INDUCTANCE MEASURING CIRCUIT.

3,432,292. METHOD OF PREPARING CHROMIUM-LITHIUM ALLOYS.

3,433,299. HEAT EXCHANGER OF POROUS METAL.

3,433,722. ELECTROLYTIC METHOD OF REMOVING WATER FROM A POLAR SOLVENT.

3,434,063. NEGATIVE RESISTANCE SUPERREGENERATIVE DIODE DETECTOR.

3,435,374. NEGATIVE RESISTANCE DEVICE OSCILLATOR CIRCUITS HAVING HARMONIC IMPEDANCE MEANS FOR MODIFYING THE OSCILLATOR FREQUENCY.

3,444,924. HEAT EXCHANGER.

3,458,309. COLOR TRANSPARENCIES PRODUCED BY ELECTROPHOTOGRAPHIC TECHNIQUES.

3,462,551. CHANNEL SYNCHRONIZER FOR MULTIPLEX PULSE COMMUNICATION RECEIVER.

3,481,852. ELECTROPHORETIC DEPOSITION OF BORON.

3,484,693. FREQUENCY SHIFTED SLIDING TONE SAMPLED DATA COMMUNICATION SYSTEM.

3,486,062. ELECTROHYDRAULIC SHOCK-WAVE GENERATING APPARATUSWITH DIRECTING AND SHAPING MEANS.

3,501,353. METHOD OF INHIBITING OXYGEN UPTAKE AND PRODUCTS FORMED THEREBY.

3,504,531. MECHANICAL IMPEDANCE TESTING USING RANDOM NOISE EXCITATION.

3,514,272. PROCESS FOR VANADIDING METALS.

3,517,238. SQUIRREL CAGE ROTOR AND METHOD OF BUILDING THE SAME.

3,517,674. RUPTURE OF ADHESIVE BONDS.

3,518,020. SPLIT SEAL RING ASSEMBLY FOR COMPRESSORS.

3,518,021. THRUST BEARING FOR COMPRESSORS.

3,522,021. PROCESS FOR METALLIZING ALUMINUM SURFACES.

Patents Withdrawn From Register

General Electric Company hereby withdraws the following patents from the Register of Patents Available for Licensing or Sale. The patents were listed as being available, in the OFFICIAL GAZETTE as indicated below:

2,680,156. MAGNETIC HEAD FOR PERPENDICULAR RECORDING. Apr. 26, 1955.

2,693,508. MAGNETIC RECORDING, REPRODUCING OR ERASING HEAD. Oct. 18, 1955.

2,723,353. NON-LINEAR RESONANT TRIGGER CIRCUITS. Mar. 27, 1956.

2,781,447. BINARY DIGITAL COMPUTING AND COUNTING APPARATUS. July 30, 1957.

2,808,202. CARRY UNIT FOR BINARY DIGITAL COMPUTING DEVICES. Feb. 11, 1958.

2,808,203. BINARY SHIFT REGISTER. May 20, 1958.

2,808,204. BINARY DIGITAL COMPUTING APPARATUS. May 20, 1958.

2,863,048. CLIPPER-AMPLIFIER AND PULSE GENERATOR CIRCUIT. Apr. 21, 1959.

2,863,136. SIGNAL TRANSLATING DEVICE. Apr. 21, 1959.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JANUARY 26, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-08-69
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-01-69
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	10-09-69
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	11-03-69
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-29-69
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	3-18-70
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	6-16-69
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-24-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-17-69
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	9-29-69
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	5-01-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	12-01-69
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	9-04-69
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	10-02-69
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—C. F. GAREAU, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	1-29-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	12-04-69

Expiration of patents: The patents within the range of numbers indicated below expire during February, 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,667,637 to 2,670,467 inclusive
Plant Patents..... Numbers 1,248 to 1,259, inclusive

REISSUES

FEBRUARY 9, 1971

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,049

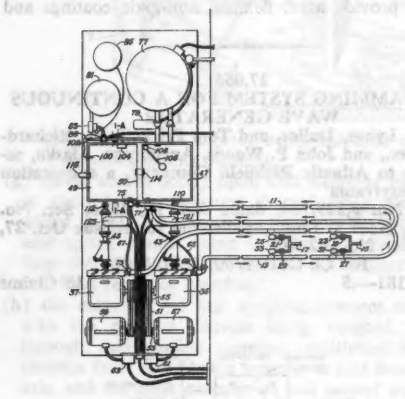
AUTOMOTIVE VEHICLE WASH SYSTEMS

H. L. Null, 4004 Golden Oaks Drive, Fort Worth, Tex. 76117

Original No. 3,389,860, dated June 25, 1968, Ser. No. 553,392, May 27, 1966. Application for reissue Dec. 24, 1968, Ser. No. 799,135

Int. Cl. B05b 9/00

U.S. Cl. 239—124 4 Claims



Following is disclosed an automotive vehicle wash system having separate rinse and wash water circulation loops. Control valves disposed in lines connected with the rinse and wash water circulation loops provide essential instantaneous change from rinse to wash water at each car wash location. Parallel electrical controls enable each car wash stall or location to energize common wash or rinse water primary motors, while preventing interference between the wash and rinse water solenoid control valves used at each location. A conductivity sensing element in a wash water storage tank controls a solenoid valve to intermittently add water to control cleaning compound concentration.

27,050

BOAT MOORING DEVICES

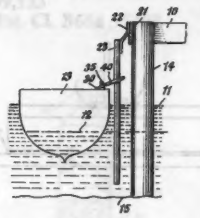
John P. Jorgenson, Fort Lauderdale, Fla., assignor, by direct and mesne assignments, to Tomlinson Industries, Inc., Cleveland, Ohio, a corporation of Ohio

Original No. 3,122,120, dated Feb. 25, 1964, Ser. No. 82,642, Jan. 13, 1961. Application for reissue Feb. 2, 1970, Ser. No. 13,145

Int. Cl. B63b 21/00

U.S. Cl. 114—230 3 Claims

A force absorbing system adapted to be used with a moored vessel includes a base affixed to the dock, a pair of yielding elements extending from the base and a pair of vertically disposed bumper sections attached to respective yielding elements. The bumper sections are suspended in



the water with clearance from the bottom and receive support from the dock from above the water line.

27,051

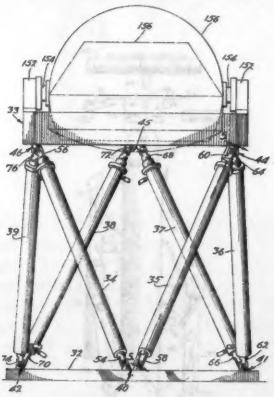
MOTION SIMULATOR

Klaus L. Cappel, Cherry Hill, N.J., assignor to The Franklin Institute, Philadelphia, Pa., a corporation of Pennsylvania

Original No. 3,295,224, dated Jan. 3, 1967, Ser. No. 416,371, Dec. 7, 1964. Application for reissue Nov. 28, 1967, Ser. No. 689,736

Int. Cl. G09b 9/08

U.S. Cl. 35—12 10 Claims



A motion simulator capable of motion in all six degrees of freedom is provided having a platform providing three points in a plane and a support base providing three points in another plane. Six extensible members are employed each connected at one end to the support base and at the other end to the platform and connecting adjacent points of the support base and platform, the extensible members being powered and controlled for providing any of the motions of the platform by selective changes in length of the extensible members. Means on the platform is provided for experiencing motion produced by movement of the platform.

27,052
AVALANCHE INJECTION SEMICONDUCTOR DEVICE

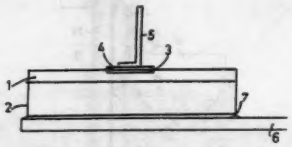
Oscar Willem Memelink, Emmasingel, Eindhoven, Netherlands, assignor to North American Philips Company, Inc., New York, N.Y., a corporation of Delaware

Original No. 3,324,358, dated June 6, 1967, Ser. No. 294,574, July 12, 1963. Application for reissue Sept. 11, 1968, Ser. No. 765,707

Claims priority, application Netherlands, July 19, 1962, 281,182

Int. Cl. H01 *3/00, 5/00*

U.S. Cl. 317—235 10 Claims



An avalanche injection diode or triode comprising a three-layer arrangement in which the middle layer, preferably epitaxially deposited, is very thin and has a low conductance, such that when voltages are applied across the layers, avalanche breakdown occurs producing avalanche injection in the middle layer and a negative resistance in its voltage current characteristic. The three layers may preferably be the same conductivity type, or the first and third layers may be of opposite conductivity types.

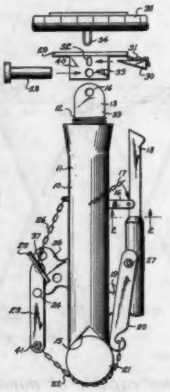
27,053
SCAFFOLD HOLDER

Joseph Capozzi, 129 Montvale Road, and Antonio Gatta, 12 Poole St., both of Woburn, Mass. 01801

Original No. 3,372,771, dated Mar. 12, 1968, Ser. No. 558,856, June 20, 1966. Application for reissue May 5, 1969, Ser. No. 835,854

Int. Cl. E04g *3/00*

U.S. Cl. 182—87 13 Claims



A scaffold holder comprising a cylindrical housing having a threaded hollow opening therein, an adjustable support having a threaded portion on one end thereof and being adapted to longitudinally travel within the housing, means on the other end of the housing for securing the housing to a column of a scaffold, a holder insert adapted to be mounted in the wall of a structure and provided with means for attaching same to the adjustable threaded support member.

27,054
LOW TOXICITY POLYURETHANE COMPOSITION PRODUCED FROM LONG CHAIN ALIPHATIC DIISOCYANATES

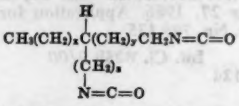
Anthony J. Castro, Oak Park, and Layton F. Kinney, Chicago, Ill., assignors to Armour Industrial Chemical Company, Chicago, Ill., a corporation of Delaware

No Drawing. Original No. 3,487,050, dated Dec. 30, 1969, Ser. No. 706,777, Feb. 20, 1968. Application for reissue Jan. 26, 1970, Ser. No. 10,669

Int. Cl. C08g *17/003, 22/18, 51/36*

U.S. Cl. 260—75 8 Claims

Polyurethane compositions prepared by the reaction of a hydroxyl containing polyester free of reactive unsaturation and an aliphatic diisocyanate having the formula



wherein z is 0 to 2, x and y are integers from 0 to 19 and the sum of x and y is from 7 to 19. The polyurethanes produced provide hard, flexible, non-toxic coatings and castings.

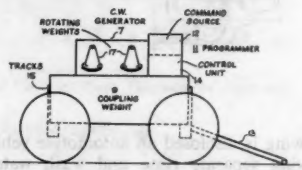
27,055
PROGRAMMING SYSTEM FOR A CONTINUOUS WAVE GENERATOR

James K. Lyons, Dallas, and Tom Prickett, Jr., Richardson, Tex., and John P. Woods, Anchorage, Alaska, assignors to Atlantic Richfield Company, a corporation of Pennsylvania

Original No. 3,229,784, dated Jan. 18, 1966, Ser. No. 66,548, Nov. 1, 1960. Application for reissue Oct. 27, 1967, Ser. No. 682,690

Int. Cl. G01v *1/00, 1/14, 1/22*

U.S. Cl. 181—.5 13 Claims



A continuous wave seismic generator and programmer for automatically governing the rate of the generator's acceleration to produce a frequency varying signal. A hydraulic motor is connected to a shaker device having a flow valve controlled by the programmer to vary the acceleration and the deceleration in the motor in a predetermined manner. As the programmer automatically repeats the steps of acceleration and deceleration, the motor drives weights in the shaker generating a cyclically varying continuous wave of a predetermined period.

27,056
VIBRATION-PROOF WEIGHING SCALE WITH FLEXURE PIVOTS

Robert H. Connors, Chicago, and King L. Klopfenstein, Prospect Heights, Ill., assignors to Triangle Package Machinery Company, Chicago, Ill., a corporation of Illinois

Original No. 3,371,731, dated Mar. 5, 1968, Ser. No. 536,215, Mar. 15, 1966. Application for reissue Apr. 11, 1969, Ser. No. 817,265

Int. Cl. G01g *23/18*

U.S. Cl. 177—47 23 Claims

1. A weighing scale having a substantially equal mass moment system, comprising

(a) a frame,

(b) a first movable weighing element, including a load receiving member adapted to receive a quantity of a

product to be weighed and having a predetermined mass,

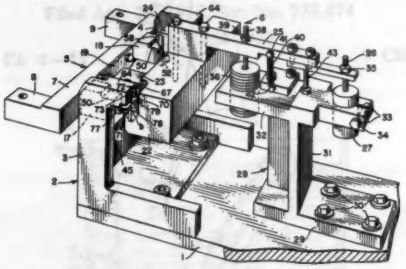
(c) a second movable weighing element having a predetermined mass,

(d) a substantially vertical flexible member connecting said first weighing element to said second weighing element,

(e) guide means associated with said first weighing element to insure movement thereof in a substantially vertical path during the weighing operation,

(f) a pivot system having the pivot axis thereof fixed,

(1) a part of said pivot system being supported by said frame, and



(2) another part thereof being mounted on said second weighing element,

(g) spring means acting upon said weighing elements to control the movement thereof when weight is added to said load receiving member, the torque of said spring means being substantially zero at the time the quantity of product to be weighed is on said load receiving member,

(h) the mass of said first weighing element together with the product thereon being weighed, acting through said flexible member, multiplied by the distance from said flexible member to said fixed pivot axis, and the mass moment of said second weighing element being substantially equal in a horizontal plane through said fixed pivot axis, whereby a substantially balanced mass moment system in said horizontal plane is achieved.

27,057

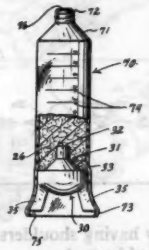
COLLAPSIBLE TUBES WITH FOLLOWER AND THE METHOD OF FILLING THEREOF

Gene Ballin, 3045 Shore Drive, Merrick, N.Y. 11566

Original No. 3,297,207, dated Jan. 10, 1967, Ser. No. 363,140, Apr. 28, 1964. Application for reissue Dec. 23, 1968, Ser. No. 799,133

Int. Cl. B65d *35/08*

U.S. Cl. 222—107 **18 Claims**



A collapsible tube for dispensing a semi-fluid composition when the tube is squeezed has a follower slidably positioned within the tube. The follower has a body portion which compresses the semi-fluid composition when pressure is applied to the tube and a skirt which cooperates with the interior wall of the tube to retain the follower in coaxial alignment with the tube.

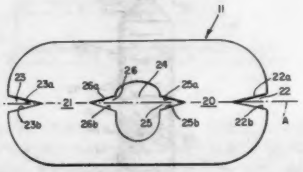
In a process for filling the collapsible tube, a flexible tapered member is inserted into the tube which is already filled with a predetermined amount of the composition and a follower is introduced into the tapered member thereby expanding the tube as the follower enters.

PATENTS

GRANTED FEBRUARY 9, 1971

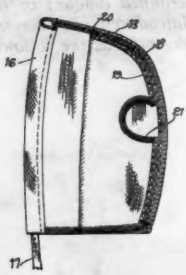
GENERAL AND MECHANICAL

3,561,009
ATHLETIC JERSEY
Jack L. Huggins, Winston-Salem, N.C., assignor to Hanes Corporation, Winston-Salem, N.C., a corporation of North Carolina
Filed Sept. 19, 1968, Ser. No. 760,949
Int. Cl. A41d *1/04*
U.S. Cl. 2—90 **8 Claims**



An athletic jersey having shoulders contoured to fit the convex shape of shoulder pads.

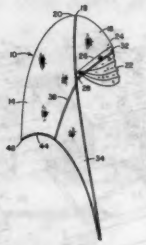
3,561,010
CONVERTIBLE HEAD COVERING
John W. Little, Hinsdale, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill., a corporation of New York
Filed Jan. 13, 1969, Ser. No. 790,631
Int. Cl. A42b *1/04*
U.S. Cl. 2—173 **1 Claim**



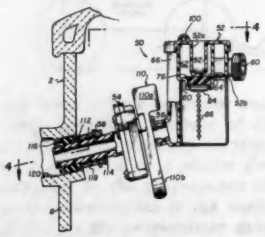
A hood type head covering having a face opening and a panel spaced rearwardly of the opening and stitched to the inner surface of the head covering. The head covering may be worn with the panel adjacent the rear portion of the hood, leaving the face of the wearer exposed, or the panel may be spaced from the rear portion to close the face opening and to cover the face of the wearer. The panel has one or more openings to expose limited areas of the wearer's face.

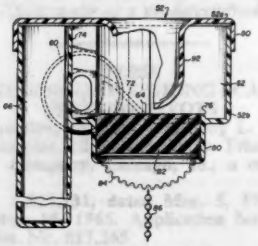
3,561,011
HEAD PROTECTOR
Richard G. Gregg, 2410 Holmes Ave., Huntsville, Ala. 35805
Filed Nov. 7, 1969, Ser. No. 874,863
Int. Cl. A42b *1/06, 1/20*
U.S. Cl. 2—204 **11 Claims**

A head protector constructed of a first panel adapted to cover the rear half of the head and extending rearward to cover the collar of the wearer, a second panel attached to the front edge of the first panel and adapted to cover the central portion of the head and a third panel which is transparent and pleated and adapted to be selectively pulled down over the bangs and forehead for protection during wind or wind-driven rain.



3,561,012
REFILL UNIT FOR A FLUSHING APPARATUS
Donald M. Szymanski, Louisville, Ky., assignor to American Standard Inc., New York, N.Y., a corporation of Delaware
Filed June 16, 1969, Ser. No. 833,598
Int. Cl. E03d *1/22*
U.S. Cl. 4—40 **23 Claims**





A refill unit positioned within a tank of a water closet, and consisting of a hollow housing defining a first

cylindrical swirl chamber having an inlet for receiving water from a water source and an outlet for supplying water to the tank, and a second cylindrical chamber having an outlet for supplying water to the water bowl. A passage connects the chambers and a dam is formed in the passage for preventing flow between the chambers during predetermined flow rates in the inner chamber.

3,561,013

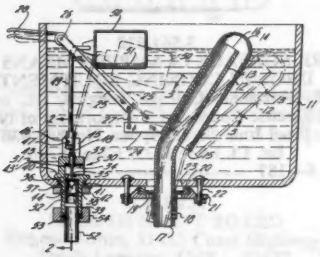
WATER TANK FOR TOILET FLUSHING

Emilio Fernandez Lopez, Uruguay, Mexico
(249 W. 14th St., New York, N.Y. 10011)

Filed Apr. 25, 1968, Ser. No. 732,474

Int. Cl. E03d 1/07

U.S. Cl. 4—42 9 Claims



Water tank for toilets or similar installations where periodical flushing is needed, with an automatically operating filling valve and with a discharge device, operating according to the siphon principle under atmospheric pressure.

3,561,014

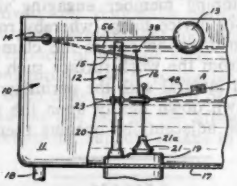
FLUSH VALVE CONTROL ASSEMBLY

Berthuld Thomas Johnson, 1551 97th St.,
North Battleford, Saskatchewan, Canada

Filed Oct. 1, 1968, Ser. No. 764,229

Int. Cl. E03d 1/34

U.S. Cl. 4—53 10 Claims



A flush valve control assembly for regulating the flushing operation by limiting the quantity of water flow out of a water closet that includes a float operated cam for retaining the valve stem of a ball valve in a flush position until the float lowers to a preselected level and then releases the ball valve stem. Adjustment mechanism is provided to retain the cam in a valve stem release position when the valve stem is in a non-flushing position and to limit the movement of the cam and thereby the maximum lowering of the float.

3,561,015

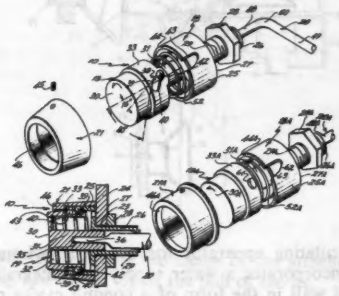
PUSH BUTTON OPERATED FLUSH MECHANISM

Clarence T. Moore, Fort Recovery, Ohio, assignor to Fort Recovery Industries, Inc., Fort Recovery, Ohio, a corporation of Ohio

Filed Apr. 23, 1969, Ser. No. 818,535

Int. Cl. E03d 1/34

U.S. Cl. 4—67 16 Claims



A push button operator for controlling opening and closing movements of a flush valve in a flush tank.

3,561,016

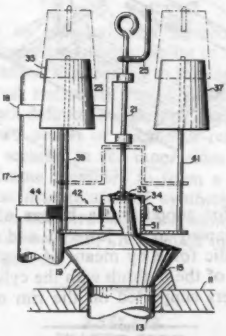
WATER-SAVING ACCESSORY FOR TOILET FLUSH TANKS

Burton F. Reynolds, 46 Shepard St.,
Cambridge, Mass. 02138

Filed Nov. 7, 1969, Ser. No. 874,873

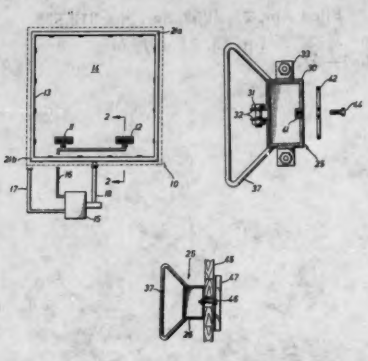
Int. Cl. E03d 1/22, 1/34, 5/02

U.S. Cl. 4—67 10 Claims



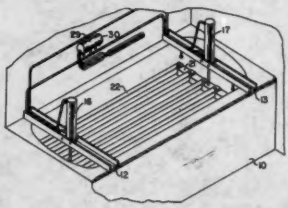
The flush tank accessory disclosed herein permits releasing either substantially all or a preselected portion of the water held in a toilet tank by means of a float which is held a predetermined distance above the valve member for selectively supporting that member. The falling water level within the tank will therefore reduce the support on the valve when the water level reaches the float thereby causing the valve to close unless it is manually held open throughout the emptying of the tank.

3,561,017
RECIRCULATION SYSTEM FOR SWIMMING POOLS
Richard W. Holland, 13103 Conifer, Houston, Tex. 77024
Filed Nov. 21, 1968, Ser. No. 777,835
Int. Cl. E04h 3/16
U.S. Cl. 4—172.17 8 Claims



Recirculating apparatus for use in a swimming pool which incorporates a water supply line integrally within the pool wall in the form of a conduit cavity or header having spaced water outlets opening into the pool substantially below the surface of the water, preferably completely encircling the pool to provide an adequate quantity of treated fresh water, and cooperative with an overflow return gutter thereby providing a pipeless water handling system for a swimming pool avoiding adjacent pipe tunnels and other equipment which is difficult to install, expensive, and difficult to service.

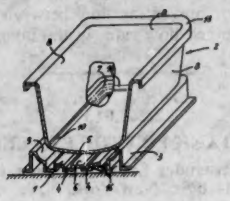
3,561,018
BATHTUB ASSIST
Mitchell D. McVay, 213 N. 3rd St., Bozeman, Mont. 59715
Filed Oct. 7, 1968, Ser. No. 765,386
Int. Cl. A47k 3/12
U.S. Cl. 4—185 5 Claims



A platform for supporting a bather at the top of a bathtub and adapted to be lowered and raised by mechanical hydraulic force by means of a cylinder and piston at each end of the bathtub with the cylinders mounted on cross-members supported on the rim of the bathtub.

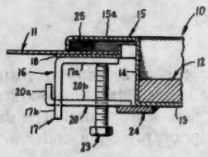
3,561,019
STAND FOR A SANITARY VESSEL
Jacques Jean Olivier Raymond Roland, 2 Avenue Bel Air, Brussels, Belgium
Filed June 26, 1969, Ser. No. 836,925
Claims priority, application Luxembourg, July 1, 1968, 56,384
Int. Cl. A47k 3/00
U.S. Cl. 4—186 16 Claims

A bearer cradle for a sanitary vessel such as a bathtub comprising a one-piece ribbed element having alternate lower and upper hollow ribs. The lower bollow ribs having bearing surfaces to rest on a base, and the upper hollow ribs have concave surfaces supporting the bottom



of the vessel and matching and fitting the rounded portions as well as the curvatures along at least a part of the periphery of the bottom.

3,561,020
WORK SURFACE CLAMPING MEANS FOR DROP-IN COOKING EQUIPMENT
Donald E. Fritzsche, Chicago Heights, Ill., assignor to General Electric Company, a corporation of New York
Filed June 24, 1969, Ser. No. 836,038
Int. Cl. E03c 1/33; F24c 15/10
U.S. Cl. 4—187 6 Claims

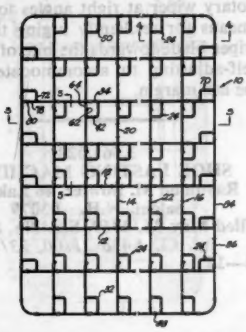


Clamping means for fastening a drop-in cooking equipment device to a work surface including a stiffening angle suitably secured to the under side of the work surface adjacent to an opening provided therein for receiving the drop-in device, one leg of the stiffening angle having at least one slot therein for receiving an end of at least one clamping member, the other end of the clamping member engaging an externally projecting flange of the drop-in device, and a screw suitably received by the portion of the clamping member extending between the end thereof passing through the slot in the stiffening angle and the end of the clamping member engaging the externally projecting drop-in device flange whereby rotation of the screw in a given direction causes the clamping member to move away from the work surface such that the trim surrounding and integral with the perimeter of the drop-in device is drawn down tightly upon the upper side of the work surface adjacent the opening therein.

3,561,021
WIRE SPRING ASSEMBLY FOR MATTRESSES
Walter V. Slominski, Lexington, Ky., assignor to Hoover Ball and Bearing Company, Saline, Mich., a corporation of Michigan
Filed Nov. 19, 1968, Ser. No. 777,099
Int. Cl. A47c 23/00
U.S. Cl. 5—247 18 Claims

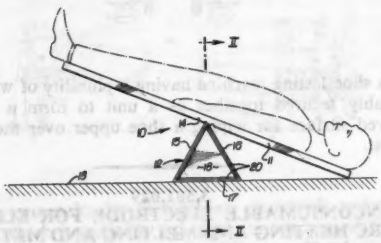
A wire spring assembly particularly adapted for mattresses for beds consisting of a plurality of springs each of which is formed from straight wire sections connected so as to form a pair of flat wire decks spaced apart a distance less than the desired thickness of the mattress

and connected by resilient springs which allow the decks to move resiliently toward each other under load. Each deck includes a rectangular border wire which encloses an area corresponding substantially to the desired area of the



mattress, and some of the springs which resist movement of the decks toward each other are connected between the border wires so as to impart firmness to the spring assembly.

3,561,022
HEALTH SLANT BOARD
Eugene James, 31423 Coast Highway, South Laguana, Calif. 92677
Filed Jan. 16, 1969, Ser. No. 791,643
Int. Cl. A47c *22/00*
U.S. Cl. 5—327 **2 Claims**



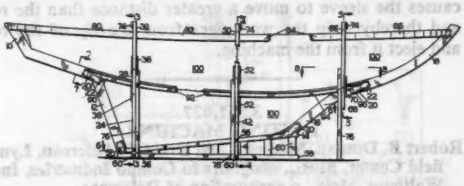
A board is provided on a support means to allow persons to selectively and optionally position themselves in semi-inverted and semi-upright positions, the support means being formed of a single sheet of metal bent into triangular configuration with triangular end pans positioned in the open ends of said sheet of metal. A retainer lip is provided on one end of the aforementioned sheet of metal to retain the support means in assembled position.

3,561,023
AX WITH REPLACEABLE TOOLS
Frederick Shandel, Albion, Calif. 95410
Filed Jan. 10, 1969, Ser. No. 790,276
Int. Cl. B25f *1/02*
U.S. Cl. 7—14.55 **5 Claims**

An ax with a flat top on its poll, a narrow lug projecting from the top and having a recess in its edge facing toward the sharp edge of the ax, and a securing flange on each attachment tool having a slot slideable over the lug to rest flat on said poll top, and a clamping fork held in the recess and straddling the lug with limited play; a keeper pocket in the flange spaced from the lug and a set screw through the base of the clamping fork engaging said keeper

pocket to tightly clamp the flange of the attachment tool to the lug and to the top of the poll of the ax.

3,561,024
METHOD OF MAKING BOAT HULLS AND THE LIKE AND A STARTER SHELL KIT THEREFOR
Allen D. Pratt, 6016 N. Burrage Ave., Portland, Oreg. 97217
Filed June 6, 1969, Ser. No. 831,128
Int. Cl. B63b *3/02*
U.S. Cl. 9—6 **3 Claims**

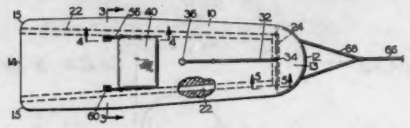


A plurality of longitudinally interconnected keel-defining frame members and a plurality of spaced side-defining frame members are secured to the inner side of longitudinally spaced transverse frame members to form an open framework defining the general shape of a boat hull. Thin pre-formed panels of glass fiber-reinforced synthetic plastic are secured to the inner sides of the keel-and side-defining frame members to form a starter shell for the boat. Glass fiber-reinforced synthetic plastic then is applied over the unobstructed inner surfaces of the panels to complete the boat hull, after which the external frame members are removed.

3,561,025
WATER SLED
Virgil V. Teach, Portland, Oreg., assignor of ninety percent to Mrs. Gloria Ray
Filed Oct. 31, 1968, Ser. No. 772,273
Int. Cl. B63b *35/72*
U.S. Cl. 9—310 **3 Claims**

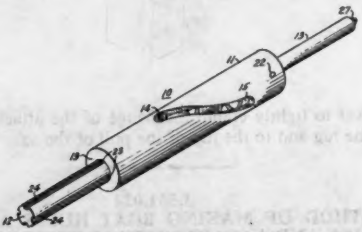
A buoyant water sled or board has means for fastening a tow rope thereon so that it can be pulled through the water. The sled has a seat for supporting a person in a sitting position and includes a hand line connected to a front portion of the sled which is grasped by the rider for steadying himself. The sled is sufficiently buoyant to

support the rider, and the seat is removable whereby the sled can be used as a float without the seat. The body of



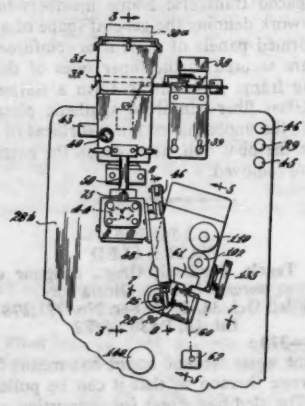
the sled is constructed of a suitable foamed plastic and a covering of glass fiber.

3,561,026
KNOCKOUT ASSEMBLY
Charles W. Schaeffer, Lebanon, Pa., assignor to Bethlehem Steel Corporation, a corporation of Delaware
Filed July 25, 1968, Ser. No. 747,523
Int. Cl. B23g *11/00*; B21k *27/00*; B21d *45/00*
U.S. Cl. 10—11 **8 Claims**



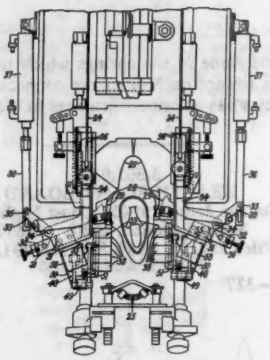
A knockout assembly for use in a forming machine has a rod with a tip shaped to form a desired indentation in a workpiece and a sleeve which surrounds the rod to eject the workpiece from the machine. The rod and sleeve are slidably mounted in a body. An arrangement of cams causes the sleeve to move a greater distance than the rod and thereby strip the workpiece from the tip of the rod and eject it from the machine.

3,561,027
LASTING MACHINE
Robert B. Dunlap, Medway, and Evald O. Peterson, Lynnfield Center, Mass., assignors to Compo Industries, Inc., Waltham, Mass., a corporation of Delaware
Filed Mar. 18, 1969, Ser. No. 808,286
Int. Cl. A43d *31/00*
U.S. Cl. 12—8.3 **16 Claims**



In a lasting machine of the kind in which a pair of rolls turning in opposite directions apply lasting and feeding stresses to the lasting margin of a shoe, improvements in means for adjusting the spacing between the axes of said rolls, means for controlling the adhesive flow from the adhesive nozzle, the adhesive delivery system, means for adjusting the position of the nozzle relative to the lasting margin, means for adjusting the axis of a rotary wiper at right angles to the axes of said rolls and means for resiliently urging the operative surface of a wiper blade towards the bite of said rolls whereby it is self-adjusting to accommodate different thicknesses of the last margin.

3,561,028
SHOE LASTING MACHINES
Raymond M. Bowler, 46 Lake St., Salem, N.H. 03079
Filed May 26, 1969, Ser. No. 827,697
Int. Cl. A43d *21/00, 23/00*
U.S. Cl. 12—12 **8 Claims**

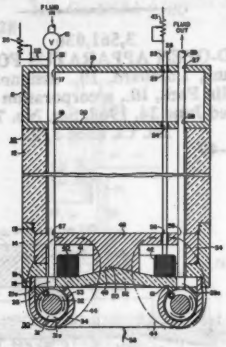


A shoe lasting machine having a plurality of wipers adjustably secured together as a unit to form a variably curved surface for wiping a shoe upper over the side of a last.

3,561,029
NONCONSUMABLE ELECTRODE FOR ELECTRIC ARC HEATING AND MELTING AND METHODS
Armin M. Bruning, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa., a corporation of Pennsylvania
Continuation-in-part of application Ser. No. 407,332, Oct. 29, 1964. This application Oct. 14, 1969, Ser. No. 866,274
Int. Cl. H05b *7/06*
U.S. Cl. 13—18 **19 Claims**

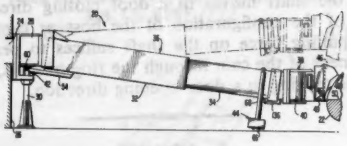
An electrode especially suitable for use in an arc furnace where the arc current may be of the order of several thousand amperes includes a fluid cooled tip forming an arcing surface, a tip supporting structure including fluid passageways for bringing fluid to and conducting fluid from the tip, and magnetic field producing means mounted near the arcing surface for causing the arc to move substantially continuously over the arcing surface in repetitive paths in a closed track formed by an annular configuration of the tip. A sufficiently large surface area is cooled at a sufficient rate to remove heat flux resulting from integrated arc spot losses which are a function of arc current, as well as heat flux resulting from radiation and convection, and maintain a desired average arcing surface temperature, taking into consideration the wall thickness between arcing surface and water surface, and the thermal conductivity of the material. A sufficient force

which is a function of arc current and magnetic field strength is exerted on the arc to move the arc at a sufficient speed which produces an arc spot dwell time so short



that the instantaneous rise at the site of the arc spot above the average surface temperature does not result in deterioration of the arcing surface at an excessive rate.

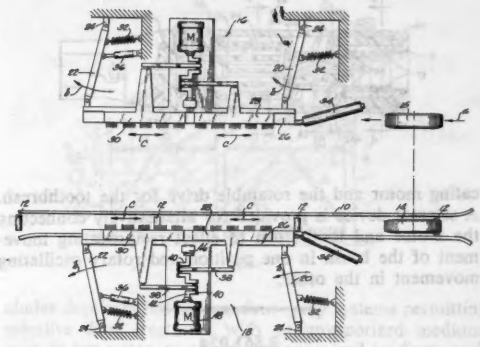
3,561,030
CONVEYANCE LOADER
Andrew G. Seipos, Miami, Fla., assignor to Wollard Aircraft Equipment, Inc., a corporation of Washington
Filed July 28, 1969, Ser. No. 845,387
Int. Cl. B65g *11/00*
U.S. Cl. 14—71 **20 Claims**



Conveyance loader includes an elongated, articulated tunnel which is vertically swingable to accommodate conveyances having doorways at different elevations. The outer tunnel section is independently pivotally adjustable to a horizontal position irrespective of inclination of the main tunnel section, to avoid tripping hazards for passengers stepping between the conveyance and the loader. Automatic leveling of the outer tunnel section is effected by a pendulum, which indicates the horizontality of the outer tunnel section, and a power system which is responsive to the position of the pendulum to swing the outer tunnel section to horizontal disposition. Manual control can be effected by manipulation of electrical switches.

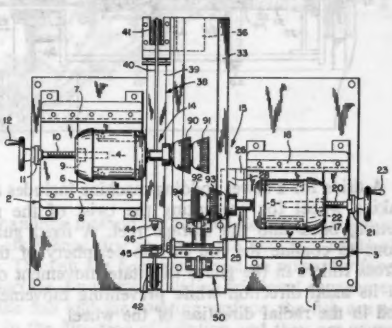
3,561,031
AUTOMOBILE TIRE WASHER
Myron M. Gusse, 353 17th St., and Melvin E. Gusse, Winnebago Heights, Malone, Rte. 1, both of Fond du Lac, Wis. 54935
Filed Apr. 29, 1969, Ser. No. 820,255
Int. Cl. B60s *3/04*
U.S. Cl. 15—21 **5 Claims**

A tire washing mechanism adapted to wash the tires on one side of a vehicle as it moves past the mechanism. The mechanism is a spring biased and horizontally disposed parallelogram linkage, the cross-member of which is parallel to the intended path of the vehicle and which carries two sets of horizontally reciprocating brush assemblies. The linkage is moved upon being engaged by a tire while maintaining the brush assemblies parallel to



the intended vehicle path. The movement of the brush assemblies is synchronized in order to balance their inertia forces and, thus, eliminate substantial force transmission to the linkage.

3,561,032
BRUSHING MACHINE
Joseph A. Kasnyik, Parma, and Vernon K. Charvat, Bay Village, Ohio, assignors to The Sherwin-Williams Company, Cleveland, Ohio, a corporation of Ohio
Filed Oct. 18, 1968, Ser. No. 768,850
Int. Cl. A46b *13/02*
U.S. Cl. 15—21 **14 Claims**

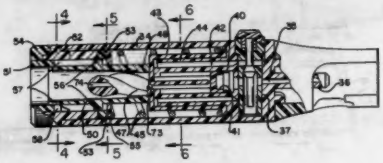


A brushing machine for finishing opposite parallel surfaces comprising a pair of oppositely directed brush spindles, each having a pair of brushes thereon, the inner brush on one cooperating with the outer brush on the other, and a work holding fixture gripping the work and moving the same past the brushes.

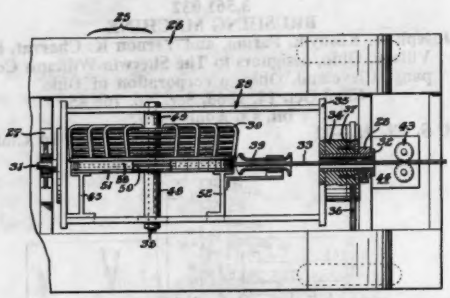
3,561,033
AUTOMATIC TOOTHBRUSH WITH MOTION SELECTOR
John M. Trenary, Fort Collins, and David W. Smith, Wellington, Colo., assignors to Aqua Tec Corporation, Fort Collins, Colo., a corporation of California
Filed May 6, 1969, Ser. No. 822,181
Int. Cl. A46b *13/06*; A47k *7/04*
U.S. Cl. 15—22 **10 Claims**

An automatic toothbrush comprises a handle provided with a detachable toothbrush element and a reciprocating

motor in the handle for driving the toothbrush. Reciprocating motion is effected by direct drive between the motor and the toothbrush and rotary oscillating motion is effected by a helical member connecting the reciprocating motor and the rotatable drive for the toothbrush. A selector device is provided for alternatively connecting the motor and toothbrush to effect reciprocating movement of the brush in one position and rotary oscillating movement in the other.

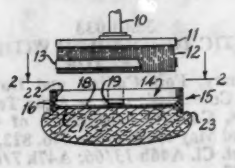


3,561,034
SEWER RODDING MACHINE
Charles B. Caperton, Montgomery Court Apts., Narberth, Pa. 19072
Original application Dec. 30, 1966, Ser. No. 613,703, now Patent No. 3,469,273, dated Sept. 30, 1969. Divided and this application Apr. 4, 1969, Ser. No. 835,278
Int. Cl. B08b *9/02*
U.S. Cl. 15—104.3 **4 Claims**



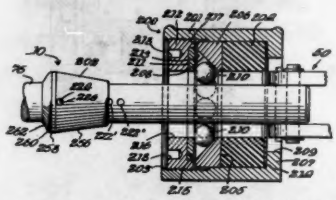
A drive for a sewer rodding machine includes a torsion-taking wheel for preventing the twist of the rod from getting back into the storage reel. A fixed guard functions to confine the rod on the periphery of the wheel. Cross rollers in the guard facilitate movement of the rod in its axial direction while preventing movement of the rod in the radial direction of the wheel.

3,561,035
FLOOR MAINTENANCE HEAD
Michele Leonforte, 19 Juniper Road, Kings Park, N.Y. 11754
Filed June 18, 1969, Ser. No. 834,348
Int. Cl. A47l *11/02, 13/16*
U.S. Cl. 15—230.19 **5 Claims**



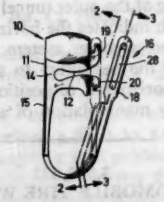
A floor pad is adhesively secured within a tube which is removably attached to the brush of a floor maintenance machine, the floor pad being rotatable by the brush. Instead of thus adhesively securing the floor pad, another form of the invention permits the floor pad to be pivoted within the tube so as to allow exposure of opposing faces of the floor pad.

3,561,036
HOLD-OPEN APPARATUS FOR DOOR
Burke J. Crane, Lombard, Ill., assignor to Rixson Inc., Franklin Park, Ill., a corporation of Illinois
Filed June 24, 1968, Ser. No. 739,239
Int. Cl. E05f *3/22*
U.S. Cl. 16—49 **3 Claims**



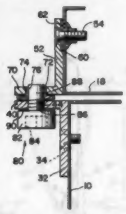
The apparatus controls axial movement of a shaft longitudinally of its own axis, which shaft is arranged for axial movement in response, respectively, to opening and closing movement of a door upon a fixed hinge axis. A boss having a camming surface is mounted in a fixed axial position along the shaft. Owing to a holding arrangement of an expandable group or ring of balls encircling the shaft, which balls are acted upon by resilient means, an axial pulling force on the shaft is required to permit axial movement of its camming boss through the ring of balls, when the shaft moves in a door closing direction. Because of the configuration of the boss or cam, a lesser axial pulling force on the shaft suffices to permit axial movement of the cam through the ring of balls, when the shaft is moving in a door opening direction.

3,561,037
SAFETY CURTAIN HANGER
Wilhelm Hachtel, 6994 Niederstetten, Germany
Filed July 16, 1968, Ser. No. 745,228
Claims priority, application Germany, July 25, 1967, H 63,385
Int. Cl. A47h *13/04*
U.S. Cl. 16—87.2 **9 Claims**



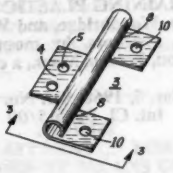
A resilient clip-type curtain hanger having a slot at its free clip end which engages at top and bottom a pair of oppositely directed hooks extending from the supporting portion of the hanger. The distance between the engaging faces of the hooks is greater than the length of the slot and the hooks can be flexed together somewhat to enter the slot.

3,561,038
REINFORCING PIVOT HINGE
Thomas M. Bennett, 4157 Circle Court, Williamsville, N.Y. 14221
Filed Aug. 28, 1968, Ser. No. 755,865
Int. Cl. E05d 9/00
U.S. Cl. 16—128 8 Claims



A first hinge portion includes a flat leaf portion which is attached to a surface of a door by suitable bolts and the like. A flange portion is provided at the upper edge of the first hinge portion and extends generally normal thereto. A second hinge portion includes a leaf portion attached to a face of a frame by suitable attaching members. A flange portion is provided at the lower edge of the second hinge portion and extends generally normally thereto. The flange portions of the two hinge portions are pivotally interconnected with one another by a pivot pin in alignment with the usual butt hinges supporting the door from the frame.

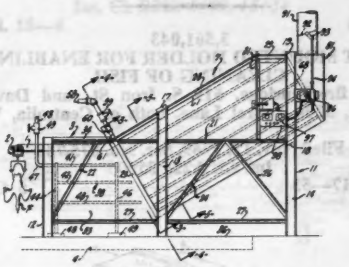
3,561,039
SPRING HINGE
David L. Amrein, St. Charles, Mo., assignor to American Air Filter Company, Inc., Louisville, Ky., a corporation of Delaware
Filed June 24, 1969, Ser. No. 836,072
Int. Cl. E05f 1/12
U.S. Cl. 16—180 3 Claims



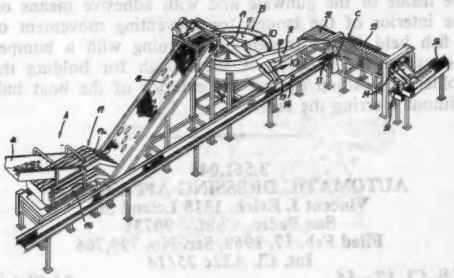
A single-piece spring hinge with spaced first strap means extending from a first edge of a rolled leaf spring element and second strap means extending from an opposite edge of the spring element through the opening formed between the first strap means, where the first and second strap means are connected to the adjoining elements to be pivotably fastened by the hinge.

3,561,040
SPRAYING APPARATUS AND METHOD FOR USE IN CONJUNCTION WITH FOWL DEFEATHERING APPARATUS
Folke K. Floden, Modesto, Calif., assignor to Food Equipment Inc., Dallas, Tex., a corporation of Delaware
Filed Aug. 2, 1968, Ser. No. 749,804
Int. Cl. A22c 21/04
U.S. Cl. 17—11.2 22 Claims

Sanitary apparatus and method for subjecting fowl, such as poultry, to a high temperature vaporized medium, such as steam, to replace the commonly employed procedure of immersing fowl in hot water scalding tanks, prior to defeathering. A compartmented housing, having spray jets on opposite sides of a U-shaped path of travel of the fowl, is inclined at a predetermined angle relative to the horizontal. The housing interior is generally smooth and self-cleaning with only spray nozzles projecting from the inner surfaces thereof. An alternate apparatus embodiment includes duplicate but independent spray systems permitting selective fowl treatment with an unvaporized medium, such as hot water, or a preferred vaporized medium, such as steam.



3,561,041
FISH HANDLING METHOD AND APPARATUS
Chester Szymanski and Albert J. Ballentine, San Jose, Calif., assignors to FMC Corporation, San Jose, Calif., a corporation of Delaware
Filed May 24, 1968, Ser. No. 731,996
Int. Cl. A22c 25/08
U.S. Cl. 17—45 7 Claims



A fish handling method for feeding fish (e.g., anchovies, sardines, etc.) head first in single file and at a relatively high rate. The fish are deposited upon an upwardly faced rotating surface. By virtue of sliding frictional engagement between the fish and the rotating surface, the fish are accelerated in the direction of rotation and they are caused to move radially by centrifugal force toward the perimeter of the rotating surface. Fish are moved away from the periphery of the rotating surface and collected in a region from which they are discharged head first in single file. The apparatus includes a rotating tub-like device which is continuously rotated about an upright axis and into which the fish are fed. Means cooperates with the rotating device for removing and collecting the fish therefrom and for delivering the fish head first in single file.

3,561,042
HOG SKINNING IMPROVEMENT
Francis Glenn Connick, Downers Grove, Ill., assignor to Swift & Company, Chicago, Ill., a corporation of Delaware
No Drawing. Filed May 26, 1969, Ser. No. 827,971
Int. Cl. A22b 5/16
U.S. Cl. 17—50 6 Claims

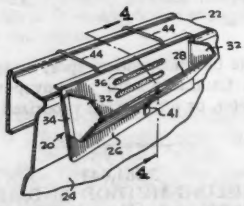
An improved process for removing the skin from a hog carcass comprising the steps of hand skinning the

mid-ventral area and then subjecting the said carcass to a blast of chilled air until the fat layers beneath the skin become sufficiently firmed that the skin may be removed in a whole piece with little, if any, fat adhering to the said removed skin.

3,561,043
BOAT MOUNTED HOLDER FOR ENABLING CLEANING OF FISH

Jack D. Breckenridge, 519 S. Iron St., and David L. Schultz, 3204 Laurel Lane, both of Centralia, Wash. 98531

Filed Nov. 12, 1969, Ser. No. 875,783
Int. Cl. A22c *25/06*
U.S. Cl. 17—53 **5 Claims**

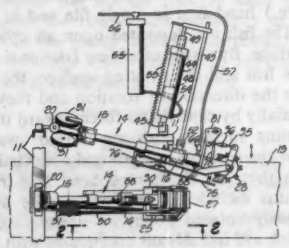


A fish holder formed with a vertical plate and an inclined plate connected to provide a trough with an opening in the bottom and having cords extending from the top over the gunwale of a boat with hooks on the end of the cord to be engaged with the under edge of the inside of the gunwale and with adhesive means on the interior of the trough for preventing movement of a fish held in the trough for cleaning with a bumper means on the exterior of the trough for holding the holder in position against the exterior of the boat hull without marring the hull.

3,561,044
AUTOMATIC DRESSING APPARATUS

Vincent J. Evich, 1315 Leland St., San Pedro, Calif. 90731

Filed Feb. 17, 1969, Ser. No. 799,706
Int. Cl. A22c *25/14*
U.S. Cl. 17—54 **24 Claims**



Fish dressing apparatus for removing skin to a predetermined depth as the fish is conveyed past a series of dressing rolls independently movable toward and away from the changing contour of the fish. Each roll is positioned by power means responsive to a master sensor subject to finer adjusting control by a more delicate servo sensor. The individual dressing rolls are also mounted for self-adjusting pivotal movement about an axis normal to the axis of rotation of the dressing roll thereby permitting the rolls to pivot as necessary to accommodate changes in the transverse contour of the fillet.

3,561,045
APPARATUS FOR MANUFACTURE OF FILAMENTS OF VARYING DENIER

Peter Heffernan, Carlisle, England, assignor to Courtaulds Limited, London, England, a British company

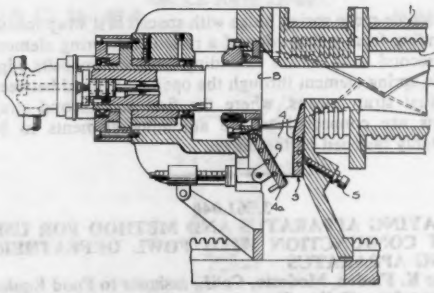
Filed June 27, 1969, Ser. No. 837,045
Claims priority, application Great Britain, July 5, 1968, 32,128/68
Int. Cl. D01d *5/20*
U.S. Cl. 18—1 **4 Claims**

A filament-drawing apparatus for imparting to a thermoplastic filament a lengthwise variation of denier, comprising a feed roll, a draw roll, a matt circumferential band and a mirror-finish circumferential band on the cylindrical surface of the draw roll, a separator roll having a matt cylindrical surface and a filament deflector, for example a rotary cam, arranged to deflect intermittently the filament from contact with one band into contact with the other band.

3,561,046
LUBRICATED DISCHARGE ORIFICE FOR RESTRAINING PLASTIC FLOW

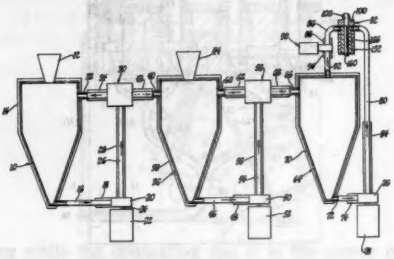
Richard N. Comes, Woodbridge, and Walter A. Rapetski, Orange, Conn., assignors, by mesne assignments, to USM Corporation, Boston, Mass., a corporation of New Jersey

Filed Mar. 5, 1968, Ser. No. 710,496
Int. Cl. B29h *5/00*
U.S. Cl. 18—2 **1 Claim**



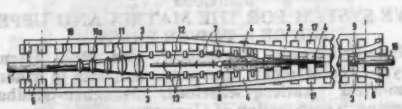
A lubricating layer is fixed on the wall of the discharge orifice of a continuous internal mixer of the kind wherein the internal pressure of the material being mixed is controlled by the choking effect of this orifice on the material discharged therethrough whenever new material is fed into the mixer. This provides a smoother restraint of the discharging material and therefore more uniform control of the pressure on the material while it is in the mixer.

3,561,047
PLASTIC MIXING AND INJECTION SYSTEM
Stirling A. McInnis, 661 Kenyon St., Troy, Mich. 48084
Filed Mar. 4, 1968, Ser. No. 710,150
Int. Cl. B29f *1/06*
U.S. Cl. 18—4 19 Claims



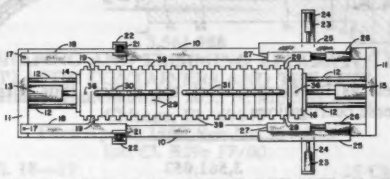
Method and apparatus for preparing for and directing a mixture of plastic material and filler material into molding dies to form an article of manufacture. Preparation includes the melting of a thermoplastic material in a heated receptacle and continuously circulating the melted plastic through the receptacle with temperature control. A transfer valve may be operated to divert the circulating plastic material to a heated mixing receptacle where filler material is added, the temperature being controlled to assure complete wetting and mixing of the filler material by and with the liquid plastic. Continuous circulation through the mixing receptacle maintains the filler material in mechanical suspension in the mixture. A second transfer valve may be operated to divert the mixture into a heated holding receptacle for continuous circulation therethrough and, as needed, for conveyance to molding dies. Suitable valve means are provided to divert flow to the dies through an injection gun. Upon filling the dies, a multiple cylindered injection machine pressurizes the mixture through the gun to eliminate voids in the molded article and to compensate for shrinkage as the mixture cools.

3,561,048
METHOD AND APPARATUS FOR PRODUCING HOLLOW BODIES BY MEANS OF FOAMABLE SUBSTANCES, PARTICULARLY WITH POLYURETHANE
Rudolf Ernst, Strasslach, near Munich, Germany, assignor to Maschinenfabrik Hennecke Gesellschaft mit beschrankter Haftung, Leverkusen, Germany
Filed July 31, 1968, Ser. No. 749,129
Claims priority, application Germany, July 31, 1967, P 17 04 842.9
Int. Cl. B29d *3/00, 23/00*
U.S. Cl. 18—4 16 Claims



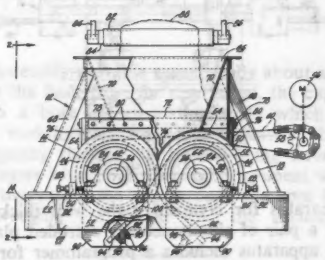
A method and apparatus for the continuous production of hollow bodies that are enclosed in foamable substances such as polyurethane, where a core tube (12) is coated with foamable material inside a covering tube (1) that is slit open in longitudinal direction, and the open covering tube is shaped around the foamed material to constitute a closed tubular body.

3,561,049
CONTINUOUS MULTI-PLATEN PRESS
Fernando V. Guerrero, Chagrin Falls, Ohio, assignor to Continental Oil Company, Ponca City, Okla., a corporation of Delaware
Filed Oct. 21, 1968, Ser. No. 769,098
Int. Cl. B30b *5/00, 15/34*
U.S. Cl. 18—6 5 Claims



Continuous platen-type press wherein a plurality of mold platens are incrementally moved through a loading, heating, cooling and unloading sequence by e.g. hydraulic cylinders; the device is useful for molding a foamed plastic product.

3,561,050
PELLET MACHINE
Clifton A. Danforth, Oreland, Pa., assignor to G. & W. H. Corson, Inc., Plymouth Meeting, Pa., a corporation of Delaware
Filed May 3, 1968, Ser. No. 726,514
Int. Cl. B29d *7/14;* B28b *3/12*
U.S. Cl. 18—9 10 Claims

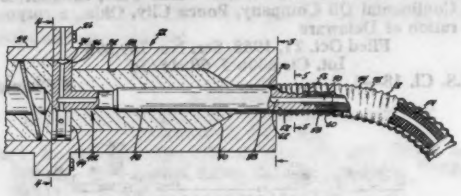


A pellet machine characterized by a pair of opposed pelletizing rolls mounted on horizontal parallel axes, each of the rolls having cylindrical resilient surfaces characterized by spaced continuous circumferential grooves forming annular lands therebetween. The rolls are disposed with the lands of each roll extending into the grooves of the adjacent roll and means are provided for rotating the rolls to provide a downward movement of the cooperatively engaged portions thereof. Suitable means are disposed above the rolls for introducing material to be pelletized into the nip of the rolls. The material passage between the interacting rolls provides a compaction and pelletizing of the material due to the elastic deformation of the resilient roll surfaces.

3,561,051
EXTRUSION APPARATUS
Richard D. Reinhart and Robert O. Straughn, Minneapolis, Minn., assignors to General Mills, Inc., a corporation of Delaware
Filed Feb. 1, 1967, Ser. No. 613,255
Int. Cl. B29d *23/04*
U.S. Cl. 18—14 9 Claims

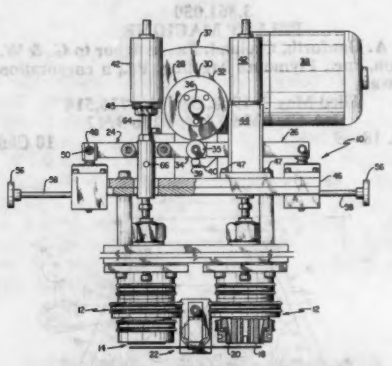
A device for continuously forming an elongated, tubular, corrugated product by forcing an extrudable material through an annular extrusion orifice. The flow of

material through the orifice is restrained or restricted in such a manner that the extruded product tends to fold



on itself as it emerges from the orifice, thus forming transverse corrugations.

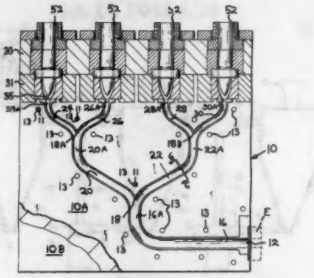
3,561,052
APPARATUS FOR FORMING PARISONS AND CONTROL MEANS THEREFOR
Roger C. Marolf, Boulder, William D. Hough, Arvada, and Clement V. Fogelberg, Boulder, Colo., assignors to Ball Corporation, a corporation of Indiana
Filed Jan. 12, 1968, Ser. No. 697,482
Int. Cl. B29d *23/04*
U.S. Cl. 18—14 **3 Claims**



An apparatus for controlling the wall thickness and weight of a pair of simultaneously extruded plastic tubings. The apparatus includes a programmer for controlling the weight and wall thickness of each of a pair of simultaneously extruded tubings, said programmer being constructed for use with an extruder head having a pair of outlet orifices, each orifice being formed by first and second members, one of said members being mounted for relative movement with respect to the other member. The programmer comprises means for programming the wall thickness and weight of the plastic tubings to be formed, means controlled by said programming means and constructed for effecting, during the extruding of plastic tubings, simultaneous movement of both of the first members of the extruder relative to the second members in the same direction by the same amount to vary the wall thickness and weight of both of the plastic tubings to be extruded, and means constructed for positioning the first member of one of the orifices of the extruder in a predetermined manner with respect to the position of the first member of the other orifice.

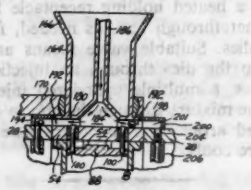
3,561,053
EXTRUSION DEVICE
Roy Gerald Pearson, Toledo, Ohio, assignor to Owens-Illinois, Inc., a corporation of Ohio
Filed May 15, 1967, Ser. No. 638,490
Int. Cl. B29d *23/04*
U.S. Cl. 18—14 **1 Claim**

An extrusion head is provided for distributing heat sensitive thermoplastic material to a plurality of outlet orifices. An inlet passage branches symmetrically to a plurality of outlet passages which communicate with the respective outlet orifices. The flow path from the inlet orifice to any of the outlet orifices is substantially equal.



Balancing of flow through the respective outlet orifices is achieved solely by the design of the passageway network and temperature control of the thermoplastic material provided by heating elements at the outlet orifices.

3,561,054
POWDER COMPACTING PRESS
Joseph E. Smith, Birmingham, Mich., assignor to Wolverine-Pentronix, Inc., a corporation of Michigan
Filed Oct. 31, 1968, Ser. No. 772,291
Int. Cl. B30b *11/02, 15/32*
U.S. Cl. 18—16 **26 Claims**

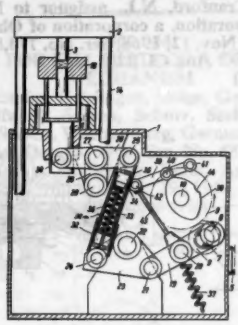


A combined hopper and rotatable positioner assembly for a powder compacting press adapted to be pivotally positioned above a compression die provided with die cavities, the hopper being rotatable and provided with a base overlying said die, the base having alternating apertures, grooves and land sections in equal number corresponding to the number of die cavities and rotational drive means to rotate the hopper in timed sequence to alternately position the apertures, grooves and land sections over said die cavities.

3,561,055
DRIVE SYSTEM FOR THE MATRIX AND UPPER DIE OF A POWER PRESS
Christian Brinkmann, Dusseldorf, and Rolf Hermes, Rheydt-Giesenkirchen, Germany, assignors to Mannesmann-Meer Aktiengesellschaft, Monchen-Gladbach, Germany, a corporation of Germany
Filed Sept. 27, 1968, Ser. No. 763,239
Claims priority, application Germany, Sept. 27, 1967, P 16 27 942.8
Int. Cl. B30b *11/00*
U.S. Cl. 18—16.5 **3 Claims**

A system for driving synchronously the matrix and upper die of a power press has a link system for controlling the matrix that includes a selectively foldable connecting rod that transmits power between two of the

links only when in the extended position, and a lost motion device permitting depression of the matrix during



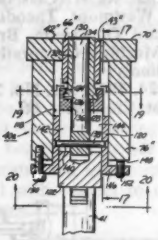
pressing while the connecting rod is in the power transmitting position.

3,561,056

TOOL SET FOR POWDER COMPACTING PRESS

Joseph E. Smith, Birmingham, and Georges D. De Troyer, Detroit, Mich., assignors to Wolverine-Pentronix, Inc., a corporation of Michigan

Filed Oct. 15, 1968, Ser. No. 767,648
Int. Cl. B30b *11/02*
U.S. Cl. 18—16.7 8 Claims



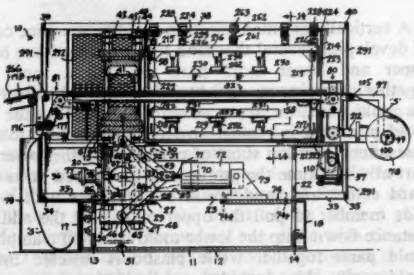
A tool set comprising a die plate having punch apertures and discharge apertures, punches for said punch apertures containing core rods held immovable in relation to said punches and lockable in position so as to be flush with the surface of said die plate.

3,561,057

APPARATUS FOR THE PRODUCTION OF FORMED ARTICLES FROM PLASTIC SHEET MATERIAL

Robert L. Butzko, 165 Holland Ave., Fairfield, Conn. 06605

Filed June 5, 1967, Ser. No. 643,665
Int. Cl. B29d *17/00*
U.S. Cl. 18—19 12 Claims



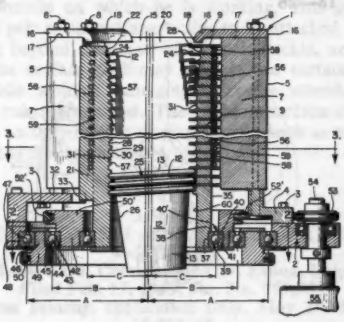
An apparatus for the production of formed articles from plastic sheet material, wherein feeding, heating, forming and cutting operations upon a step-by-step advanced strip of the plastic sheet material are carried out in related stages, wherein the marginal edges of the strip are secured to the feeding means during its advance through the machine, and wherein the heating means is arranged in immediate juxtaposition to the forming means to present the material to the forming means at its optimum temperature for forming.

3,561,058

RIM SHAPING AND TRIMMING APPARATUS FOR PLASTIC CONTAINERS AND THE LIKE

Henry Komendowski, 2655 N. Motzart Ave., Chicago, Ill. 60647

Filed Apr. 4, 1968, Ser. No. 718,826
Int. Cl. B29c *17/00*
U.S. Cl. 18—19 25 Claims



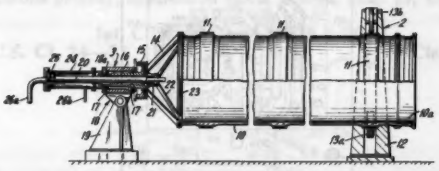
A knife assembly movable eccentrically about a plastic cup to trim the flash from the cup flange, the cup being guided into a bore of a nutating mold which has a progressive curl forming helical mold cavity about its interior engaging the flange, the cup being serially engaged by fingers which project into engagement with the cup to positively shift the cup through the bore by continuously wedging the flange into the encompassing cavity.

3,561,059

APPARATUS FOR CENTRIFUGALLY MOLDING TUBES OR REINFORCED PLASTIC MATERIAL

Willy Guldenfels, Neu-Allschwil, Switzerland, assignor to Basler Stuckfarberei A.G., Basel, Switzerland

Filed Oct. 10, 1967, Ser. No. 674,178
Claims priority, application Switzerland, Oct. 12, 1966, 14,823/66
Int. Cl. B29c *5/00*
U.S. Cl. 18—26 9 Claims

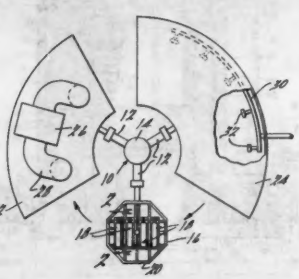


Apparatus for centrifugally molding tubes of reinforced plastic material includes one or more rotatably mounted and driven centrifugal molds, arranged with their axes in spaced parallel relation, and a common feed device for the plastic material and the reinforcing material cooperable with each of the molds. The front or feed end of each mold is rotatably supported on roller bearings for

limited vertical displacement of the front end of the mold. The opposite or rear end of each mold is provided with a relatively small diameter axle journal supported on a pivotally mounted balance beam by means of ball bearings, the balance beam being pivotally supported on a fixed bearing block.

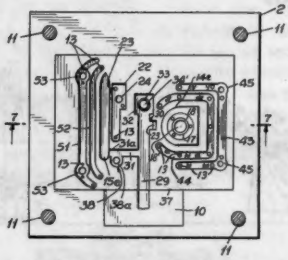
Means are provided adjacent the rear end of the mold for ejecting the molded product from the mold. The feed device is provided with conduits, connected to sources of the various materials, and with means for selectively mixing and applying the materials to the interior surface of each mold.

3,561,060
ROTATIONAL CASTING MOLD
Frederick J. Stephens, Warren, Mich., assignor to Allen Industries, Inc., a corporation of Delaware
Filed Mar. 8, 1968, Ser. No. 711,656
Int. Cl. B29c *5/04*
U.S. Cl. 18—26 **5 Claims**



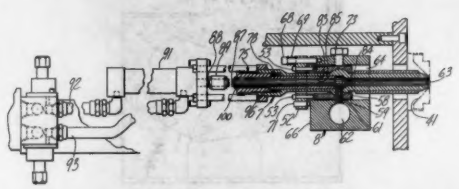
A method and a mold for rotationally casting hollow plastic articles formed with an opening for charging the plastic into the mold and for removing the finished article therefrom, and which opening is sealed during the casting operation by a magnetically mounted lid, which preferably additionally includes a vent therethrough and evaporative cooling means thereon.

3,561,061
DIE CASTING AND SIMILAR MOLDS WITH ACCELERATED VENTING MEANS
Harry R. Bucy, 625 S. Glenwood Place, Burbank, Calif. 91506
Filed Oct. 17, 1967, Ser. No. 675,852
Int. Cl. B29f *1/00*
U.S. Cl. 18—30 **21 Claims**



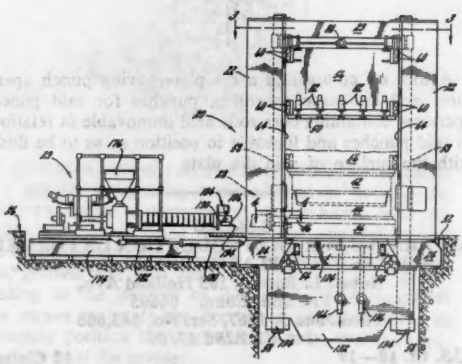
A mold for receiving pressure injected molten material characterized in part by the incorporation of air venting means associated with the runner system of the mold and including venting means disposed closely adjacent each gate between a runner and a cavity served by the runner.

3,561,062
INJECTION MOLDING NOZZLE WITH FLOW-CONTROL MECHANISM
John Goron, Cranford, N.J., assignor to Midland-Ross Corporation, a corporation of Ohio
Filed Nov. 12, 1968, Ser. No. 774,851
Int. Cl. B29f *1/00*
U.S. Cl. 18—30 **5 Claims**



A manifold and nozzle assembly within injection-molding equipment which will normally comprise an extruder, an accumulator, a manifold, and a plurality of nozzles projecting through the manifold. This invention is especially directed to flow-control valve mechanism within each nozzle in addition to shutoff valve mechanism.

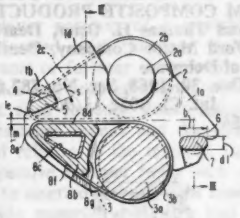
3,561,063
VERTICALLY ORIENTED INJECTION MOLDING MACHINE
William E. Sindelar, Westmont, Theodore F. Novak, La Grange, and Richard D. Froula, Brookfield, Ill., assignors to Danly Machine Corporation, Chicago, Ill., a corporation of Illinois
Filed June 24, 1968, Ser. No. 739,566
Int. Cl. B29f *1/00*
U.S. Cl. 18—30 **10 Claims**



A vertically oriented injection molding machine capable of developing several thousand tons or more force to hold upper and lower mold parts defining a mold cavity together including an upright frame with a bed to receive the mold parts, an upper power slide carrying the upper mold part that is rapidly stroked downwardly to a predetermined position short of contact with the lower mold part at which time the power slide is retained at its downward extent and fluid pressure cooperates with a lower slide member to pull the upper mold part the additional distance down onto the lower mold part and clamping the mold parts together while plastic is injected into the mold cavity. Also included are limits for the amount of force developed in pulling the upper power slide down, providing auxiliary fluid pressure to strip and separate

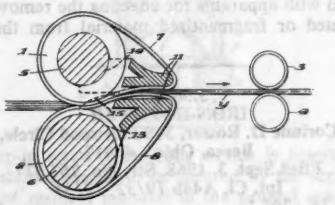
the upper mold part from the lower mold part after the molding operation is complete and insuring that the upper power slide will not fall if a power or other failure occurs.

3,561,064
CAGE FOR THE BELTS OF A DRAWING MECHANISM
Sigmund Kemmler, Geislingen, Steige, Germany, assignor to Spindelfabrik Sussen, Schurr, Stahlecker & Grill G.m.b.H., Sussen, Wurttemberg, Germany
Filed Oct. 18, 1966, Ser. No. 587,601
Claims priority, application India, Apr. 22, 1966, 104,961; Germany, Sept. 29, 1966, S 58,547
Int. Cl. D01h *5/88*
U.S. Cl. 19—255 **15 Claims**



A cage for the upper and lower belts of a drawing mechanism for a spinning machine or the like, wherein the cage is provided with undivided side walls removably secured together in spaced relationship in the direction of the axes of the drawing rollers by a spacing rail and guide rails for the belts mounted between the side walls. The spacing rail and the guide rail for the upper belt are constructed to be interchangeable so that characteristics of the belt tension, spacing and shape may be changed thereby because the guide rail and spacing rail are differently constructed with respect to each other and each symmetrical with respect to their longitudinal and transverse directions.

3,561,065
SPINNING CRADLES
Warren E. Macdonald, P.O. Box 116, Seekonk, Mass. 02771
Filed Jan. 10, 1969, Ser. No. 790,353
Int. Cl. D01h *5/88*
U.S. Cl. 19—255 **7 Claims**



A cradle for long draft spinning apparatus to direct the guide belts between which the yarn is drawn in passing through the spinning frame. The cradle is made substantially in one piece, with no separable tensors, but the belts are guided over lip members disposed so as to offset the path of the yarn from direct alignment of the bite of the rolls, thereby to control the fibers of the drafted yarn. The lip members are formed in one piece with the side members of the cradle, while a slot is provided in one of the side members for insertion and removal of the belts.

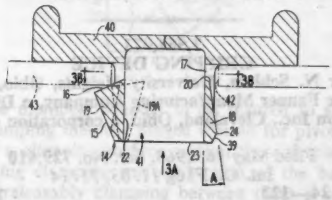
3,561,066
BELT BUCKLE GUARD
Allen R. Osteen, P.O. Box 42, 1804 S. 30th, Fort Pierce, Fla. 33450
Filed May 6, 1968, Ser. No. 726,966
Int. Cl. A44b *21/00, 11/00*
U.S. Cl. 24—3 **2 Claims**

This is a belt buckle guard attachment that is to be secured over the belt buckle of a worker, particularly a gas station attendant or mechanic, so that the worker's belt buckle will not damage the surface of the work piece or automobile on which he is working. This guard includes a pair of spaced apart clips to be attached over the belt just beyond each end of the belt buckle, and it has a cushion surface that may contact the surface of the automobile without damaging it as the attendant may lean or rub thereagainst. The cushion surface may also serve as an information display surface such as an advertisement of the products sold, etc.

3,561,067
BUCKLE FOR SKI AND MOUNTAINEERING SHOES
Loris Baso, Corso Milano 19, Padua, Italy
Filed Feb. 17, 1969, Ser. No. 799,737
Claims priority, application Italy, May 25, 1968, 16,917/68
Int. Cl. A43c *11/00*
U.S. Cl. 24—70 **14 Claims**

A buckle for ski and/or mountaineering shoes, wherein the tensioning lever or other critical parts thereof can be readily removed for replacement. Such critical part is fastened to a plate which is then independently fastened by any suitable but detachable means to a further plate which is permanently fastened to the boot or shoe.

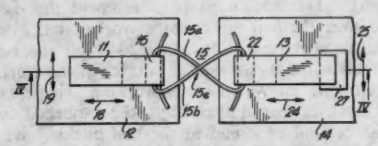
3,561,068
FASTENERS
Gordon Croxson, High Wycombe, England, assignor to Illinois Tool Works Inc., Chicago, Ill., a corporation of Delaware
Filed Mar. 14, 1969, Ser. No. 807,225
Claims priority, application Great Britain, Mar. 19, 1968, 13,274/68
Int. Cl. F16b *19/00;* **G12b** *9/00*
U.S. Cl. 24—73 **5 Claims**



This invention relates to a plastic snap fastener having a head for engaging one side of an apertured panel and

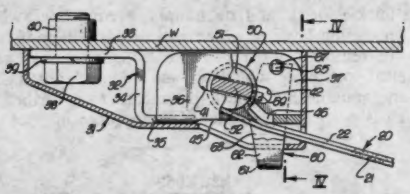
a shank carrying resilient shoulder members for engaging the opposite side of a panel. The resilient members include variable thickness webs which decrease in thickness from a maximum abreast the start of the entering face to a minimum abreast the retaining face of the resilient members. The webs control and provide a reliable snap action to the fastener.

3,561,069
RESILIENT FASTENING DEVICE
Albert Asseo, 26 Rue la Fontaine, Paris 16°, France, and René Neyman, 12–14 Rue Montcalm, Paris 18°, France
Filed May 5, 1969, Ser. No. 821,708
Int. Cl. A44b *21/00*
U.S. Cl. 24—73 **8 Claims**



A resilient member coupling first and second end portions to each other extends between first and second portions of material to which the first and second end portions are affixed and passes through end loops formed in the first and second end portions. The resilient member comprises a pair of rubber strings each having two end areas and a central area. The end areas are interlocked and positioned in the end loops formed in the first and second end portions and the strings cross each other in the central area thereof to form a figure 8.

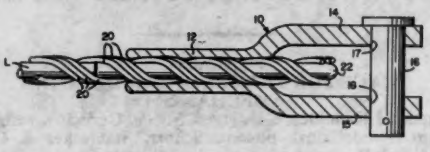
3,561,070
SAFETY BELT ADJUSTABLE ANCHOR DEVICE
Richard F. Harmon, Gardena, Calif., assignor to American Safety Equipment Corporation, New York, N.Y., a corporation of New York
Filed Apr. 29, 1969, Ser. No. 820,141
Int. Cl. A44b *11/00*
U.S. Cl. 24—196 **4 Claims**



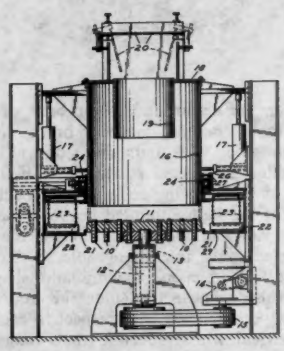
An adjustable anchor device has an adjustment bar with a bight portion and two spaced legs having free ends pivoted to spaced sidewalls of a frame and having tabs engaging a slidable snubber bar extending between the sidewalls to slide the snubber bar away from an abutment extending between the sidewalls and thereby release a safety belt therebetween for adjustment.

3,561,071
GRIPPING DEVICE
Seymour N. Schlein, University Heights, Ohio, assignor to The Fanner Manufacturing Company, a Division of Textron Inc., Cleveland, Ohio, a corporation of Rhode Island
Filed May 16, 1968, Ser. No. 729,610
Int. Cl. F16g *11/03, 11/14*
U.S. Cl. 24—123 **16 Claims**

A device, and method of making the same, for gripping a linear body wherein a plurality of helically preformed resilient elements are secured in a socket member between a sleeve and a core by swaging or other mechanical action. The preformed elements project from the socket and are disposed to wrappingly engage a line.

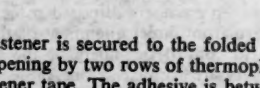


3,561,072
MACHINE FOR DISASSEMBLING COMPONENTS FROM COMPOSITE PRODUCTS
Earl A. Oster and Thomas H. Oster, Dearborn, Mich., assignors to Ford Motor Company, Dearborn, Mich., a corporation of Delaware
Filed Dec. 30, 1968, Ser. No. 787,646
Int. Cl. B02c *13/00*
U.S. Cl. 241—186 **5 Claims**



This invention is concerned with a fragmentizing machine for the disintegration of solids and more particularly metallic objects. This fragmentization or disintegration permits the ready disassembling of components from composite products. The distintegration of these metallic objects is accomplished by accelerations imparted to the metallic objects by repeated collisions with rapidly moving blunt impact means driven by and secured to a rotating plate. This invention is especially concerned wtih apparatus for effecting the removal of the disintegrated or fragmentized material from the impact area.

3,561,073
IRON-IN-ZIPPER
Corinne D. Rosser, 388 Fairwood Circle, Berea, Ohio 44017
Filed Sept. 3, 1968, Ser. No. 757,527
Int. Cl. A44b *19/32, 19/34*
U.S. Cl. 24—205.1 **3 Claims**



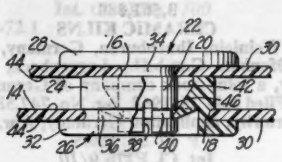
A slide fastener is secured to the folded over edges of a garment opening by two rows of thermoplastic adhesive on each fastener tape. The adhesive is between each tape and the respective fold and also between each tape and the garment edge adjacent the edge.

3,561,074

METHOD OF MOUNTING FASTENER COMPONENTS AND CONSTRUCTION THEREOF

Walter W. Mosher, Jr., 738 Fairmount 95101, and Donald A. Long, 936 Uclan Drive 95104, both of Burbank, Calif.

Filed Aug. 16, 1968, Ser. No. 753,153
Int. Cl. A44b 17/00; G09f 3/14
U.S. Cl. 24—208 2 Claims



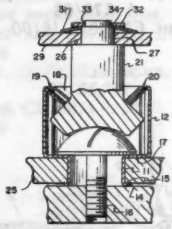
Material layer portions of a stretchable plastic material are formed with fastener holes therethrough. Plastic fasteners or fastener components are formed with enlarged heads and reduced shanks with a recess peripherally about each fastener shank adjacent the fastener head. The fastener shanks and the recesses thereof are proportioned relative to the material layer stretchability and the respective fastener holes such that the fastener shanks may be inserted through their respective holes with the stretchable material stretching and permitting such passage. When the material layer portions are positioned aligned with the fastener shank recesses, the material layer portions are received in the recesses with the fastener holes returning substantially to original size so that the material layer portions engage the fastener shanks and retain the fastener in assembly therewith. The material layer portions may be parts of strap-like portions of an identification-type member with the fastener shanks alignable and connectible together to retain the material layer portions adjacent each other.

3,561,075

THREADED FASTENER CAPTIVATING DEVICE

George J. Selinko, Palatine, Ill., assignor to Motorola, Inc., Franklin Park, Ill., a corporation of Illinois

Filed July 15, 1969, Ser. No. 841,775
Int. Cl. A44b 17/00; F16b 13/00
U.S. Cl. 24—217 9 Claims



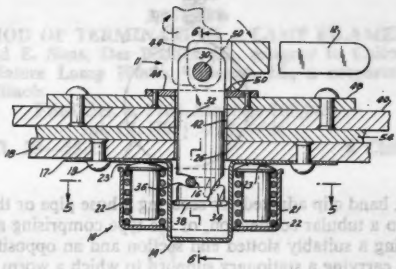
A snap-in screw captivating device is inserted into a hole in sheet material to be secured by the screw and is formed of resilient material in the general configuration of a slotted cylinder having a screw head receiving chamber. The captivating device fits within the hole in the sheet material and expands to engage the edges of the hole. The upper edges of the chamber bend inwardly a short distance into the chamber to form a ledge; and the screw is pushed past this slotted ledge camming it outwardly to allow the head to pass, whereupon the chamber resumes its original position. The chamber may be extended to permit backing out of the screw from the thread and to provide space for a snap button to be placed on top of the screw head. When the button is in place, the button also is captivated by the action of the captivating device holding the button in place.

3,561,076

ROTARY ENGAGEABLE LEVER ACTUATED FASTENER ASSEMBLY

Conrad J. Gunther, Uniondale, N.Y., assignor to Dzus Fastener Co. Inc., West Islip, N.Y., a corporation of New York

Filed Mar. 21, 1969, Ser. No. 809,130
Int. Cl. A44b 17/00
U.S. Cl. 24—221 3 Claims



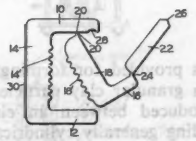
A fastener assembly which includes interengageable receptacle and operating handle members in which the receptacle member has a relatively fixed supporting base portion, a detent portion including a crosspin or rod mounted on said base portion and spring means interposed between said base and detent portions with the detent portion being shiftable relative to the base portion from a normal position with the spring means being relatively expanded to a fastener locked position with the spring means relatively contracted. The operating handle is in turn provided with an operating lever portion shiftable between open and closed positions and also with a cam portion in the form of a stud, having a transverse spiral cam slot, pivotably depending from the lever portion. When the lever is in open position the cam portion can be engaged with the detent portion by inserting the spiral cam slot over the crosspin and rotating the entire operating handle assembly so that the slot and crosspin are interengaged. The fastener assembly is then locked by shifting the operating lever to closed position which in turn causes the detent portion to shift to relatively spring contracted position thereby holding the assembly in closed or locked position under spring tension.

3,561,077

HANGER FOR LITTER BAGS AND THE LIKE

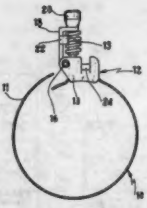
Ethan C. Grant, P.O. Box 2091, 4955 River Road N., Salem, Oreg. 97308

Filed Feb. 18, 1970, Ser. No. 12,376
Int. Cl. A44b 21/00
U.S. Cl. 24—250 7 Claims



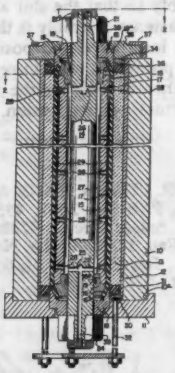
A base member, adapted to be secured to a support, has a clamping member hinged thereto for pivotal movement of a clamping surface section thereof relative to a cooperating clamping surface section of the base member, for releasably clamping between them a portion of the outer end of a litter bag or the like. Locking means releasably interengages the base and clamping members to secure the latter in clamping position.

3,561,078
BAND CLIPS
Guido Care, 10a Via Dossello, Villanuova sul Clisi, Brescia, Italy
Filed Dec. 5, 1968, Ser. No. 781,521
Claims priority, application Italy, Jan. 17, 1968, 11,661/68
Int. Cl. B65d *63/00*
U.S. Cl. 24—274 **3 Claims**



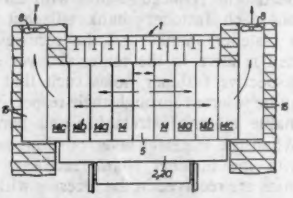
A band clip adapted for securing a hose pipe or the like on to a tubular connection, of the type comprising a band having a suitably slotted end section and an opposite section carrying a stationary support, to which a worm screw bearing element is pivotally secured. Said bearing element which can be brought in an operative position wherein the worm screw gets engaged with said slotted section, carries a pair of sidewardly extending ears, adapted to cooperate with said stationary support in order to transfer to the latter the torque stress as caused by the tightening operation of said worm screw.

3,561,079
APPARATUS FOR PRESSING OF CLAY PIPE USING AN ELASTOMERIC MANDREL
Richard H. Anderson, Dover, Ohio, assignor to The Robinson Clay Product Company, Akron, Ohio, a corporation of Maine
Filed Mar. 11, 1968, Ser. No. 712,152
Int. Cl. B28b *21/20*
U.S. Cl. 25—31 **7 Claims**



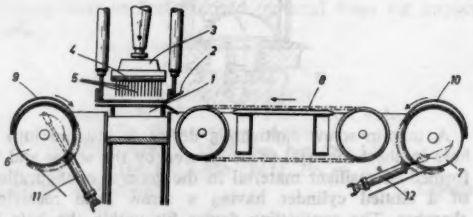
A method is provided for forming a length of green clay pipe from granular clay particles wherein the particles are introduced between an elastomeric mandrel and a surrounding generally cylindrical wall of an outer housing, then the mandrel is uniformly expanded outwardly to compress the clay particles into a green clay pipe, which is then removed from the housing. The apparatus provides a thin metallic shell lining the inner face of the housing for the full length of the pipe to be formed, and removal of the formed pipe is facilitated either by (1) slitting the shell from end to end longitudinally along one or more lines extending for its full length and pushing the shell endwise outwardly by power means after the pipe is formed, or (2) by holding the shell slightly compressed radially inward while forming the pipe and thereafter releasing the stress in the shell permitting it to expand and to release the pipe, or (3) by forming the pipe while the shell is cold and thereafter heating the shell electrically or by steam causing it to expand and release the pipe.

3,561,080
CERAMIC KILNS
Hans-Karl Weinlein, Ibbenburen, Germany, assignor to Keller Ofenbau G.m.b.H., Laggenbeck, Westphalia, Germany, a joint-stock company of Germany
Filed July 25, 1968, Ser. No. 747,580
Claims priority, application Germany, Apr. 18, 1968, P 17 58 180.5
Int. Cl. F27b *9/10*
U.S. Cl. 25—142 **2 Claims**



A tunnel ceramics kiln has openings so arranged that when gaps between cars carrying ceramic ware to be fired are aligned with the openings, aprons are moved into the gaps to assist in deflecting hot gases into the openings. The aprons may be of differing lengths and in one embodiment a single apron is used with apertures therein.

3,561,081
NEEDLE PUNCHING MACHINE FOR MAKING ENDLESS WEBS FROM HAIR OR FIBERS
Ernst Fehrer, Auf der Gugl 28, Linz, Austria
Filed Dec. 5, 1968, Ser. No. 781,538
Claims priority, application Austria, Jan. 11, 1968, A 275/68
Int. Cl. D04h *18/00*
U.S. Cl. 28—4 **4 Claims**



The machine comprises means for moving a web in a predetermined direction over a perforated table supporting said web. Two deflecting rollers having each a rough covering and respectively disposed before and behind the table in said predetermined direction. Two part-cylindrical cover shells have a smooth outside surface and extend each over part of the periphery of one of said rollers on the outside of said covering. Each of said shells is pivoted on the axis of the respective roller.

3,561,082

METHOD OF CRIMPING AND/OR STABILIZING TEXTILE STRANDS

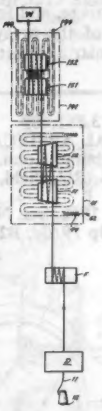
Robert K. Stanley, Media, Pa., assignor to Techniservice Corporation, Lester, Pa., a corporation of Pennsylvania

Continuation-in-part of applications Ser. No. 112,374, May 24, 1961, and Ser. No. 415,068, Dec. 1, 1964. This application Sept. 12, 1967, Ser. No. 667,294

The portion of the term of the patent subsequent to Dec. 7, 1982, has been disclaimed

Int. Cl. D02g *1/00*

U.S. Cl. 28—72.1 13 Claims



A textile strand which has been subjected to crimping distortion strains is stabilized in configuration in an apparatus and by a process which includes heating the strand in a heating zone where its rate of travel through the zone is reduced in successive increments and cooling the strand in a cooling zone under processing conditions provided to avoid storage distortion of wound strand.

3,561,083

METHOD OF ASSEMBLING MULTIPLE ELEMENT TYPE ELECTRON GUNS

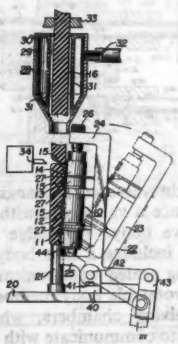
Shinichi Sawagata, Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan, a corporation of Japan

Original abandoned application Aug. 23, 1967, Ser. No. 662,741. Divided and this application July 24, 1969, Ser. No. 861,526

Claims priority, application Japan, Aug. 31, 1966, 41/56,991

Int. Cl. H01j *9/18, 9/36*

U.S. Cl. 29—25.16 9 Claims



A method of assembling a multiple element type electron gun wherein a number of electron gun units are each respectively held by pivotally supported holding members which are assembled to form a polygonal space around a central axis. Consequently, the electron gun units are pressed against and contacted with a softened insulating support material which has been set at the central axis. The material is hardened, thereby securing the electrodes, and is then cut at a prescribed position thereon.

3,561,084

METHOD OF TERMINATING A LAMP FILAMENT

Richard E. Sims, Des Plaines, Ill., assignor to Chicago, Miniature Lamp Works, Chicago, Ill., a corporation of Illinois

Filed Oct. 4, 1968, Ser. No. 765,149

Int. Cl. H01j *9/18, 9/36*

U.S. Cl. 29—25.15 8 Claims

A lamp filament is reliably and firmly connected both electrically and mechanically to a lead wire or mounting post by a body of metallic material intimately entrapping the filament and metallurgically bonded to the lead wire. In order to terminate the filament, the filament is placed on the lead wire and overlaid with a body of metal. The metal is heated to a plastic or semi-plastic and non-liquid state and is pressed against the filament and lead wire so that the filament is enveloped by the metal and the metal is diffusion bonded to the lead wire.

3,561,085

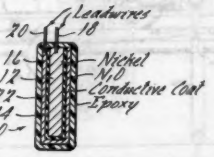
METHOD OF MAKING AN ALLOYED METAL OXIDE CAPACITOR

William W. Garstang, Belgium, Wis., assignor to Syncro Corporation, Oxford, Mich., a corporation of Michigan

Filed June 13, 1968, Ser. No. 736,672

Int. Cl. H01g *3/07*

U.S. Cl. 29—25.41 7 Claims



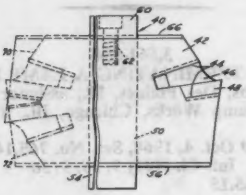
A novel construction for a nickel oxide capacitor including the use of a novel alloy and a novel method of manufacturing a nickel oxide capacitor.

3,561,086

CUT-OFF TOOLS AND SLOTTING CUTTERS

Victor Milewski, Birmingham, Jack O. Sullivan, Glenarden, and Michael K. Herden, Detroit, Mich., assignors to The Valeron Corporation, a corporation of Michigan

Filed Mar. 20, 1968, Ser. No. 714,566
Int. Cl. B26d *1/00;* B27b *33/02;* B27g *13/00*
U.S. Cl. 29—96 1 Claim



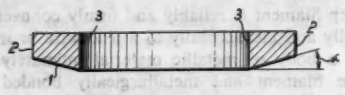
Cut-off tools and slotting cutters which include a wedge retained insert blade construction having arcuate holder seats and matching arcuate insert and wedge surfaces to establish transverse insert and wedge location on a relatively narrow holder.

3,561,087

METHOD OF MAKING PISTON RING

Max Koehler, Kastanienalle 2, Witten-Bommern 581, Germany

Filed Oct. 6, 1967, Ser. No. 673,340
Claims priority, application Germany, Oct. 10, 1966, K 60,420
Int. Cl. B23p *15/06*
U.S. Cl. 29—156.6 5 Claims



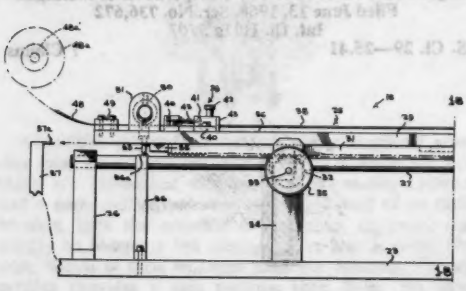
A split piston ring of pressed and sintered metal powder and method of making the same. The piston ring is characterized primarily in that it has a higher density on its inner periphery than on its outer periphery, while the same density and density distribution prevail on every radial cross-sectional plane.

3,561,088

MATRIX CORE THREADING APPARATUS

John A. Raickle, Hopewell Junction, N.Y., assignor to Industrial Micronics, Incorporated, Leesburg, Va., a corporation of New York

Filed Dec. 16, 1968, Ser. No. 783,966
Int. Cl. B23p *19/04;* H05k *13/04*
U.S. Cl. 29—203 23 Claims



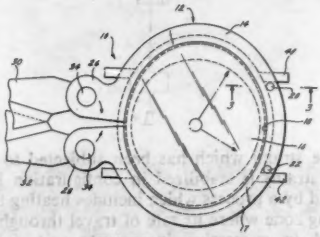
A machine for threading wires through an array of magnetic cores on filler plates to form a memory matrix having a rectilinearly reciprocative carriage on which plural hollow needles are firmly held in tensioned condition with portions of the needles adequate to span the filler plates projecting beyond the carriage. The wires extend through and protrude a short distance beyond the needles and are moved unitarily with the needles and carriage through an advance stroke feeding both the needles and wires through parallel rows of the cores, after which the wires are held in tension while the needles are retracted, leaving the wires threaded through the cores, and the wires are cut adjacent the proximal edge of the array. Means are provided for supporting the needles against deviation from their assigned paths during reciprocation, for automatically clamping and releasing the wires relative to the carriage, and for minute relative displacement of portions of the array transversely of the needle path and for angular and vertical adjustment of the array.

3,561,089

CRYSTAL APPLICATOR

Ludwig Fischer, Waterbury, Conn., assignor to Benrus Watch Company, Inc., Ridgefield, Conn., a corporation of New York

Filed July 5, 1968, Ser. No. 742,769
Int. Cl. B23p *19/04;* B23g *17/00*
U.S. Cl. 29—210 10 Claims



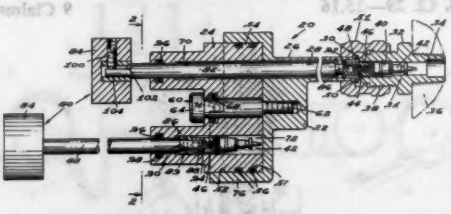
An applicator tool for placing a non-circular crystal into a correspondingly shaped bezel opening formed in a watch case comprises locating means adapted to cooperate with a portion of the watch case to properly and accurately locate the crystal relative to the bezel opening.

3,561,090

VALVE CORE CHANGING TOOL

Junior L. Fritch, Edgerton, Ohio, assignor to Robinair Manufacturing Corporation, Montpelier, Ohio, a corporation of Ohio

Filed Nov. 22, 1968, Ser. No. 778,282
Int. Cl. B23p *19/04*
U.S. Cl. 29—213 10 Claims



A pressure tight valve core changing tool, adapted to remove and replace a valve core without loss of pressure through the valve body. The valve core changing tool disclosed herein includes a first body member having a passage providing sealed communication with the valve, and a relatively rotatable body member having two sealed valve core receiving chambers, which may be alternatively indexed to communicate with the passage. A grappling means is provided within each of the chambers which may be manipulated through the first body member passage to remove and releasably retain the core of

the valve. The valve core is then retracted to within the chamber, and the second body member is rotated, relative to the first body member, to align the other chamber with the passage. The grappling means is then extended to replace the valve core, without loss of pressure through the valve.

3,561,091
METHOD AND APPARATUS FOR COMPRESSING PISTON RINGS AND INSTALLING PISTONS IN CYLINDER BORES

Leo Pigozzi, 3215 Burdick Drive, Oakland, Calif. 94602

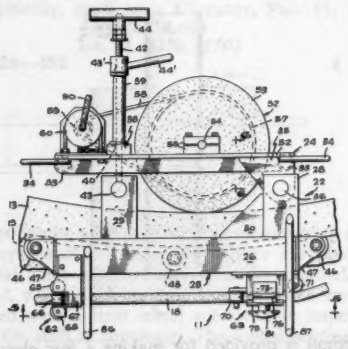
Filed Apr. 19, 1968, Ser. No. 722,811
Int. Cl. B23p *15/08, 19/04;* B23q *3/18*
U.S. Cl. 29—222 1 Claim

A system of compressing piston rings on a piston by passing a sleeve member with a tapered bore over the rings to gradually compress the same. The sleeve feeds the piston and the compressed rings to a second sleeve with a generally cylindrical bore which maintains the rings in a compressed state. This latter sleeve, with the piston therein is then placed over the bore in a cylinder and the piston forced out of the sleeve and into the cylinder.

3,561,092
GASKET TRACTOR

Francis M. Matheny, Lynwood, and Robert N. Faires, Covina, Calif., assignors, by mesne assignments, to Ameron, Inc., Monterey Park, Calif., a corporation of California

Filed Mar. 21, 1969, Ser. No. 809,134
Int. Cl. B23p *19/02*
U.S. Cl. 29—235 12 Claims

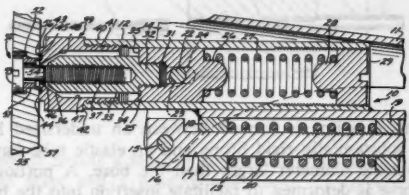


A device having a chassis with a motor-driven wheel adapted to engage the inner surface of a peripherally grooved spigot end portion of a large concrete pipe and with guide rollers adapted to engage the outer grooved surface of the spigot portion, together with means for guiding a gasket into place in the groove as the device travels circumferentially around the pipe.

3,561,093
METHOD OF ATTACHING A SLEEVE TO A WORKPIECE

Bulent Gulistan, Malibu, Calif., assignor to Deutsch Fastener Corp., Los Angeles, Calif., a corporation of California

Continuation-in-part of application Ser. No. 744,260, June 13, 1968, which is a continuation-in-part of application Ser. No. 578,728, Sept. 12, 1966. This application Nov. 29, 1968, Ser. No. 784,527
Int. Cl. B23p *17/00;* B21d *39/00;* B23b *11/00*
U.S. Cl. 29—400 14 Claims

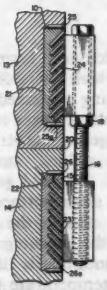


The method of securing a sleeve to a workpiece in which the sleeve is provided with a first abutment at one end and is inserted into an opening in the workpiece so as to bring the first abutment into adjacency with a surface of the workpiece. A gripping member having a second abutment and a shank is extended through the sleeve so that the second abutment engages the sleeve and the shank projects beyond the opposite sleeve end, a tension then being applied to the shank to hold the first abutment firmly against the workpiece surface, while simultaneously the opposite end of the sleeve is bent outwardly to form an overlapping flange cooperating with the first abutment to secure the sleeve to the workpiece.

3,561,094
METHOD OF JOINING CAST METAL PARTS

Cleon B. Harris, 1732 Sherwood Forest Blvd., Baton Rouge, La. 70815

Filed Nov. 18, 1968, Ser. No. 776,437
Int. Cl. B22d *19/10;* B23p *7/00*
U.S. Cl. 29—401 6 Claims



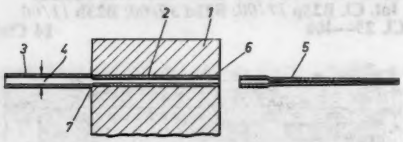
A method of securing together two cast metal pieces which comprises excavating a rectangularly shaped cavity in each cast metal piece, the cavities being opposite the other and adjacent the junction of the cast metal pieces, placing within each cavity a metal piece having the same dimension as the cavity, securing the piece therein, the metal piece having studs attached thereto, said

studs receiving a bolt extending, continuously, from one stud to the other, said bolt furnishing reinforcement for the cast metal junction when in place.

3,561,095
METHOD OF FORMING A COUPLING BETWEEN A FITTING AND TUBE

Wilhelm Bergmann, Hamburg, Germany, assignor to Eppendorf Geraetebau Netheler & Hinz GmbH, Hamburg, Germany, a corporation

Filed June 18, 1968, Ser. No. 744,274
Claims priority, application Germany, June 20, 1967, P 12 85 814.9–12
Int. Cl. B23p *11/02*
U.S. Cl. 29—451 **8 Claims**

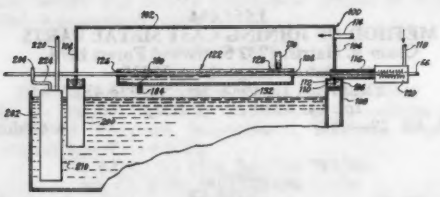


This coupling is formed between an undersized bore in a substantially rigid fitting and an elastic tube having an outside diameter larger than the bore. A portion of the tube is deformed to facilitate insertion into the bore, and the oversized portion is then pulled through.

3,561,096
METHOD OF CONTINUOUS TUBE FORMING AND GALVANIZING

Theodore H. Krengel, Flossmoor, and Emil Wilk, Park Forest, Ill., assignors to Allied Tube & Conduit Corporation, Harvey, Ill., a corporation of Illinois

Continuation-in-part of application Ser. No. 341,043, Jan. 29, 1964, which is a continuation of application Ser. No. 106,699, May 1, 1961, now Patent No. 3,122,114. This application Nov. 7, 1968, Ser. No. 774,063
Int. Cl. B23p *3/00, 19/04*
U.S. Cl. 29—460 **4 Claims**

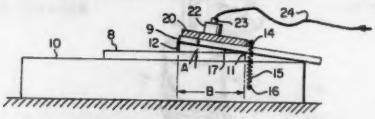


A process for continuously forming and galvanizing tubing from strip in which the steel strip is formed to rounded shape while being advanced continuously in one direction to bring the lateral edges together, continuously welding the abutting edges of the strip to seal the formed tubing and scarfing the welded portion of the tubing to cut off the portions of the weld projecting beyond the periphery, cleaning the outer surfaces of the tubing with cleaning solutions and rinsing the cleaned tubing with water for removal of the cleaning solutions, advancing the cleaning tubing continuously through an enclosure maintained at elevated temperature to preheat the tubing, advancing the preheated tubing through a bath of molten zinc arranged in linear alignment with the formed tubing in a position so that the tubing enters and leaves the bath and passes through the bath at a level below the surface of the bath to avoid contact with oxides on the surface of the bath, continuously adding molten zinc to the bath in an amount in excess of that taken by the tubing to cause overflow from the edges of the bath beyond the tubing to continuously flush oxides and slag from the bath, enclosing the bath within a housing which communicates with the enclosure for preheating and introducing non-oxidizing gas into the enclosure for maintaining a relatively non-oxidizing atmosphere during preheating and galvanizing, removing excess zinc from the surface of the tubing after leaving the bath by means of an air knife through which air at elevated temperature is projected angularly onto the surface of the tubing and then freezing the coating of molten zinc on the tubing surface.

3,561,097
EXPLOSIVE SPOT WELDING METHOD AND MEANS USING ANGULAR ORIENTATION AT THE WELDED JUNCTION

Harry J. Addison, Jr., Willingboro, N.J., assignor to the United States of America as represented by the Secretary of the Army

Filed May 6, 1968, Ser. No. 726,932
Int. Cl. B23k *21/00*
U.S. Cl. 29—470.1 **9 Claims**

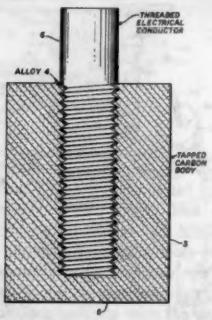


Explosive spot welding of relatively-thin metal alloy plates or sheets may be accomplished by using a very-narrow angle between the plates or sheets to be welded and with a short overlap in which one edge of one sheet intersects the contiguous face of the other sheet, before welding, and forming a line contact. The welding force is applied by an explosive charge which is provided by a relatively small-size pellet placed over the center of the overlap above the upper-most panel or sheet to be joined. Only slight holding force is applied to the parts to be joined and this is only sufficient to hold such parts in position one with respect to the other before the weld takes place.

3,561,098
METHOD OF MAKING JOINT ASSEMBLY BETWEEN A CARBON BODY AND AN ELECTRICAL CONDUCTOR

Marvin W. Voelker, Grand Island, N.Y., assignor to Great Lakes Carbon Corporation, New York, N.Y., a corporation of Delaware

Original application Dec. 28, 1966, Ser. No. 605,285. Divided and this application Dec. 2, 1969, Ser. No. 881,529
Int. Cl. B23k *31/02*
U.S. Cl. 29—470.5 **8 Claims**



A method is provided for making a low electrical resistance joint assembly between a carbon body and an electrical conductor. One of these assembly members con-

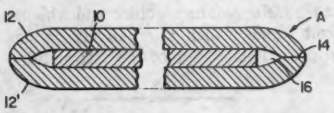
tains an internally threaded recess and the other is externally threaded and the two members are in threaded engagement. An alloy is within the recess between threads of the carbon body and threads of the conductor. The alloy has been heated above its melting point, and is then cooled to solidify it between threads of the assembly members. Threaded engagement between the conductor and the carbon body is effected while the alloy is in a molten condition within the recess. The alloy expands or exhibits cumulative growth during and after solidification, thus adding to the mechanical bond and engagement between the threaded carbon body and the threaded electrical conductor and thus forming a connection of low electrical resistance and good strength. Typically the carbon body may be a graphite lead-in rod, the electrical conductor a copper rod, and the connections made are for use in electrolytic cells.

3,561,099

PROCESS OF MAKING A COMPOSITE BRAZING ALLOY OF TITANIUM, COPPER AND NICKEL

Howard Mizuhara, San Mateo, Calif., assignor to Western Gold & Platinum Company, Belmont, Calif., a corporation of California

Filed Mar. 27, 1968, Ser. No. 716,455
Int. Cl. B23k *31/02*
U.S. Cl. 29—471.5 **1 Claim**



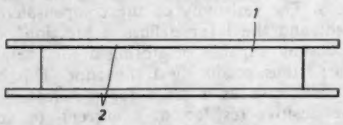
A process for producing a malleable composite product from at least two malleable metals in proportions that form brittle alloys, by arranging the metals in a pair of overlapping outer layers and at least one inner layer. The outer layers are hermetically sealed to each other around the inner layer(s) to provide an airtight enclosure thereabout during subsequent metal working operations. During such metal working to reduce the thickness of the composite product, plastic deformation of the inner layer(s) will be confined to the enclosure formed by the outer layers. Thus the cross-sectional weight ratio of metals will be maintained constant across the entire product.

3,561,100

BONDING BEARING ALLOY HAVING HIGH TIN CONTENT TO STEEL SUPPORT

Friedrich-Wilhelm Rabenau and Erich Jüger, Neckarsulm, Germany, assignors to Karl Schmidt GmbH, Neckarsulm, Germany, a corporation of Germany

Filed Jan. 26, 1967, Ser. No. 611,894
Claims priority, application Germany, Feb. 11, 1966, Sch 38,468
Int. Cl. B23k *31/02*
U.S. Cl. 29—492 **1 Claim**



Bearings having a laminar structure comprising a steel support layer and a bearing alloy layer are produced. Light metal heterogeneous bearing alloys containing tin are treated, e.g. etched, to detin the surface thereof, are then coated with a light metal substantially impervious to molten tin, such as aluminum. The coated bearing alloy is then bonded to a steel support by heat and pressure without emergence of tin from the bearing alloy.

ERRATUM

For Class 29—493 see:
Patent No. 3,561,320

3,561,101

BONDING BEARING ALLOY HAVING HIGH TIN CONTENT TO STEEL SUPPORT AND BEARING

Friedrich-Wilhelm Rabenau and Erich Jäger, Neckarsulm, Germany, assignors to Karl Schmidt G.m.b.H., Neckarsulm, Germany, a corporation of Germany

Filed Jan. 20, 1967, Ser. No. 610,669
Claims priority, application Germany, Jan. 25, 1966, Sch 38,374
Int. Cl. B23k *31/02*
U.S. Cl. 29—497.5 **8 Claims**

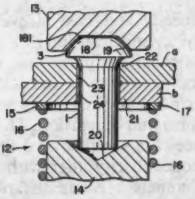
Bearings having a laminar structure comprising a steel support layer and a bearing alloy layer are produced. Light metal heterogeneous bearing alloys containing in excess of about 7% tin are invested in a light metal impervious to molten tin, such as aluminum. The invested bearing alloy is then bonded to a steel support by heat and pressure without emergence of tin from the bearing alloy.

3,561,102

PROCESS OF FORMING A COLD DRIVEN RIVETED JOINT

Joseph A. Diemer, Flossmoor, Ill., assignor to Champion Commercial Industries, Inc., Cuyahoga, Ohio, a corporation of Ohio

Filed Sept. 25, 1968, Ser. No. 762,412
Int. Cl. B21d *39/00*; B23p *11/00*
U.S. Cl. 29—509 **15 Claims**



A riveted joint formed by a cold-formed button-head rivet of low-carbon steel having a shank, a tapered neck, and a flattened semispheroidal head with a diameter about 1.6 to 1.8 times the diameter of the shank, the outer surface of said neck which engages the upper edge of the rivet hole being inclined about 20 to 25 degrees relative to the rivet axis. In forming such joint the rivet is driven cold without annealing by subjecting it to a clamping force of 20 to 100 tons to expand the shank about 4 to 10 percent and thereby expand the rivet holes at least 2 percent. The manufactured head of the rivet is deformed by a rivet-driving member having a tapered recess with a flattened bottom surface and a frusto-conical surface generated by rotating about an axis in a line inclined about 40 to 50 degrees relative to said axis.

3,561,103

METHOD OF PREPARING A ZINC DIE CASTING

Bernard K. Dent, Union City, Ind., assignor to Sheller-Glove Corporation

No Drawing. Continuation-in-part of application Ser. No. 778,366, Oct. 14, 1968. This application Dec. 1, 1969, Ser. No. 881,277

The portion of the term of the patent subsequent to Jan. 13, 1987, has been disclaimed

Int. Cl. B23k *19/00*; B23p *17/00*

U.S. Cl. 29—527.5 15 Claims

A method of preparing a zinc die casting with a simulated wood grained finish thereon comprising the steps of: (a) preparing a mold die for use in forming the zinc die casting, (b) texturing the interior face of the die to supply it with an inverse wood grained texture such that it will impart a simulated wood grained surface to the zinc, (c) die casting the zinc, (d) applying at least one or more wood colored paint compositions to the grained surface of the die cast zinc, and (e) drying the paint composition; and, the product formed by the above method.

3,561,104

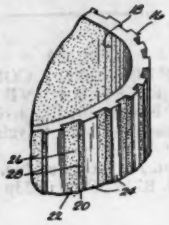
METHOD OF MANUFACTURING CYLINDER LINES

Maurice O. Holtan and William J. Holtan, Wauwatosa, Wis., assignors to Slinger Foundry Company, Inc., Slinger, Wis., a corporation of Wisconsin

Original application Jan. 10, 1966, Ser. No. 519,782, now Patent No. 3,439,586, dated Apr. 22, 1969. Divided and this application Dec. 9, 1968, Ser. No. 800,017

Int. Cl. B23p *17/00*

U.S. Cl. 29—527.6 6 Claims



A rough surfaced sand cast sleeve of cylinder iron with a generally cylindrical interior periphery and an axially ribbed external periphery has the surfaces of its external ribs ground to true cylindrical form, preferably in a centerless grinder, to provide an accurately predetermined over-all form and dimension. The resulting external cylindrical surfaces are chucked and the central openings bored in true concentricity therewith for uniform wall thickness, the channels between the ribs being left with rough sand cast surfaces so that a cylinder casting will anchor itself mechanically to the liner without voids or air pockets.

3,561,105

METHOD OF PRODUCING A HOT-FORMED ALUMINUM BASE PRODUCT

Daniel B. Cofer, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga., a corporation of Georgia

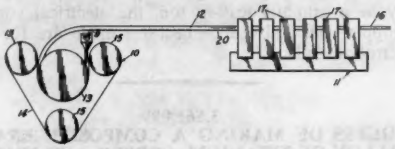
Continuation of application Ser. No. 649,658, June 28, 1967. This application Sept. 4, 1969, Ser. No. 866,410

The portion of the term of the patent subsequent to Apr. 25, 1984, has been disclaimed

Int. Cl. B23p *17/00*

U.S. Cl. 29—527.7 7 Claims

What is disclosed herein is a method of producing a hot-formed aluminum-base product from molten metal by solidifying a molten aluminum-base metal to obtain a cast metal, initiating the hot-forming of the cast metal while the cast metal is in substantially that condition in which it solidified, and hot-forming the cast metal by deforming the cast metal a substantial number of times to cause the cast metal to elongate at least by a factor of twenty along an axis of elongation and to cause substantial movement of the cast metal along a plurality of axes substantially perpendicular to the axis of elongation. The method produces a hot-formed aluminum-base product in which the as-cast grain structure of the cast metal is substantially completely destroyed and the method is disclosed as using a continuous casting machine in which molten aluminum-base metal is solidified to obtain a cast metal and a rolling mill to which the cast metal is passed at hot-forming temperature from the casting machine and which has a plurality of roll stands which alternatively change the transverse cross-sectional shape of the cast metal.



3,561,106

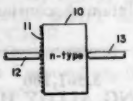
BARRIER LAYER CIRCUIT ELEMENT AND METHOD OF FORMING

Thomas D. McGee, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa, a corporation of Iowa

Filed July 3, 1968, Ser. No. 742,242

Int. Cl. H01l *7/02*

U.S. Cl. 29—576 1 Claim



A ferroelectric crystal such as barium titanate, is uniformly doped to produce an n-type semconductor. Electron-acceptor ions are then added to the surface of the crystal to produce a surface barrier layer wherein the electron-donor ions of the original n-type semiconductor crystal are exactly compensated by the added electronic acceptor ions. The resistivity of the compensated layer is very high; and the layer defines a junction of high dielectric constant capable of storing a relatively large electric charge thus producing a capacitor. This barrier layer may also serve as a diode for rectification, or a temperature-sensitive resistor, or a current- or voltage-sensitive resistor. In one embodiment, the acceptor ions are provided in the form of a metallic oxide and silver electrodes contact the crystal. When the combination is fired in a suitable atmosphere, the oxide is reduced and the metal diffuses into the n-type crystal to produce the compensated layer. Thus, an electronic element is provided in a single process step with the silver electrodes alloying with the reduced oxide on the surface of the crystal.

3,561,107
SEMICONDUCTOR PROCESS FOR JOINING A TRANSISTOR CHIP TO A PRINTED CIRCUIT

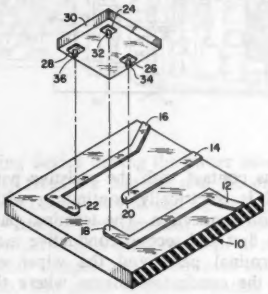
Howard S. Best, Horseheads, and Robert E. Bowser, Big Flats, N.Y., assignors to Corning Glass Works, Corning, N.Y., a corporation of New York

Continuation-in-part of application Ser. No. 415,314, Dec. 2, 1964. This application Mar. 27, 1968, Ser. No. 716,568

The portion of the term of the patent subsequent to Oct. 1, 1985, has been disclaimed

Int. Cl. B01j *17/00;* H01l *1/16, 1/24, 7/68*

U.S. Cl. 29—577 4 Claims



A method of attaching transistors to printed circuits or microcircuits by employing conductive pillars bonded or welded to contact areas on each. The pillars are first attached to contact areas on the transistor chip.

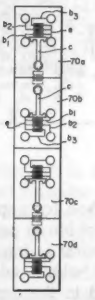
3,561,108
ALTERNATED ORIENTATION OF CHIPS ON SEMICONDUCTOR WAFERS

Charles E. Benjamin, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y., a corporation of New York

Filed Aug. 2, 1967, Ser. No. 657,863

Int. Cl. H01l *7/64*

U.S. Cl. 29—578 3 Claims



A process of fabricating semiconductor devices in which a master slice having a standard device configuration is utilized for obtaining a variety of finished device forms, in which the dimension for the frames of the master slice is designated a, and an array of device forms having a dimension of $a(n+\frac{1}{2})$ is to be fabricated, which includes the essential step of fabricating the device forms so that there is 180° rotational symmetry about a center point for successive rows of device forms in said array.

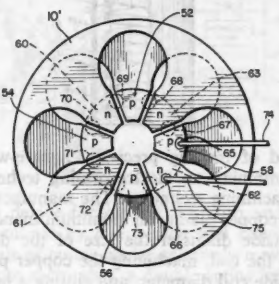
3,561,109
METHOD OF MANUFACTURING THERMOELECTRIC DEVICES

Allen T. Puder, Pasadena, Calif., assignor to Borg-Warner Corporation, Chicago, Ill., a corporation of Delaware

Filed Nov. 7, 1968, Ser. No. 774,156

Int. Cl. B01j *17/00;* H01l *15/00*

U.S. Cl. 29—573 4 Claims



A method of forming a thermoelectric module includes shaping two pairs of electrically conductive plates, and placing a p-type layer of thermoelectric material between the first pair of plates and an n-type material between the second pair of plates. Each plate has openings placed so that cuts along predetermined lines result in separation of the plates from the sandwich, with each separated plate individually carrying conjugate mating segments of thermoelectric material. Appropriate sizing of the p-type and n-type layers of thermoelectric material affords ready control of the individual thermoelectric element cross-sectional area and the element length, to provide optimum performance of a multi-stage thermoelectric assembly. The separated plates are interfitted into a composite sandwich of p- and n-type materials to form a thermoelectric module.

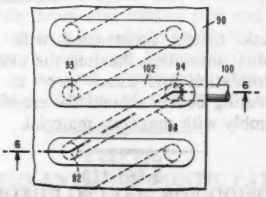
3,561,110
METHOD OF MAKING CONNECTIONS AND CONDUCTIVE PATHS

Richard A. Feulner, Hopewell Junction, Stephen A. Milkovich, M D Beacon, and Lewis F. Miller, La Grangeville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y., a corporation of New York

Filed Aug. 31, 1967, Ser. No. 664,809

Int. Cl. B41m *3/08*

U.S. Cl. 29—602 3 Claims

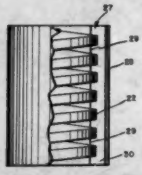


Electrical and/or thermal connection between conductive layers in ceramic or other high temperature substrates, and internal or attached metallurgical structures, is obtained by filling via or transverse holes with dry metallic particles and sintering.

3,561,111
METHOD FOR MAKING PRECISION, SQUARE-WIRE AIR CORE COILS

Alfred B. Beck, Torrance, and Kenneth L. Schirmer, Gardena, Calif., assignors to TRW Inc., Redondo Beach, Calif., a corporation of Ohio

Filed Aug. 7, 1968, Ser. No. 750,956
Int. Cl. H01f 7/06
U.S. Cl. 29—602 7 Claims

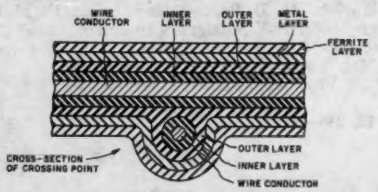


A method of making precision, square-wire air core coils by combining an electroforming technique with a precision machining technique. The manufacture includes the steps of copper plating an aluminum mandrel having a polished outside diameter the size of the desired inside diameter of the coil, machining the copper plating to the desired outside coil diameter, and cutting a helical groove through the copper plating to form a coil. The coil ends are then trimmed to the desired length and mounting apertures are formed at the ends of the coil. Finally, the mandrel is separated from the coil by dissolving the mandrel in a solution of lye. Additional optional steps include depositing a coating of silver on the coil, installing square cross-section Teflon combs inside the coil to prevent deformation, and enclosing the coil inside a cylindrical sleeve of heat shrinkable tubing to provide longitudinal rigidity.

3,561,112
METHOD OF MANUFACTURING A STORAGE MATRIX

Theodoor Holtwijk, Willem Lems, and Antonius Gerardus Hendrikus Verhulst, Emmasingel, Eindhoven, Netherlands, assignors, by mesne assignments, to U.S. Philips Corporation, New York, N.Y., a corporation of Delaware

Filed Mar. 7, 1968, Ser. No. 711,350
Claims priority, application Netherlands, Mar. 16, 1967, 6703932
Int. Cl. H01f 7/06
U.S. Cl. 29—604 3 Claims



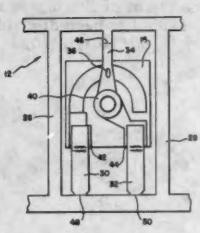
A magnetic matrix constructed with crossing conductors of dual insulation, heating the assembly to melt the outer insulation and cause same to flow to form smooth insulating bodies around the crossings, and coating the assembly with magnetic material.

3,561,113
METHOD FOR MAKING RHEOSTATS

Clarence A. Burke, Henrietta, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y., a corporation of New York

Filed Jan. 30, 1969, Ser. No. 795,247
Int. Cl. H01c 1/14, 17/00
U.S. Cl. 29—621 6 Claims

The disclosure relates to a method for making rheostats. A substrate is prepared for supporting a resistive pattern with a first conductive member at one end, the substrate including a second conductive member forming an electrically common connection. A conductive means is positioned over the substrate, the conductive means integrally supporting a wiper element and a terminal pair. The wiper element is rotatably secured to the substrate, so that one end makes adjustable

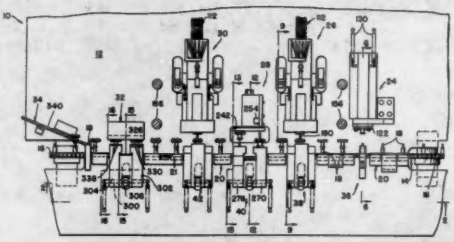


and contiguous contact with the resistive pattern, while the other end is electrically continuous with the electrically common connection. The terminal pairs are then secured to the first and second conductive members, and finally the terminal pairs and the wiper element are severed from the conductive means where they are integrally joined.

3,561,114
BOBBIN LUGGER AND METHOD

William C. Thoms, New Cumberland, Fransiscus C. Bakermans, Harrisburg, and Ronald B. Barnes, Camp Hill, Pa., assignors to Berg Electronics, Inc., New Cumberland, Pa., a corporation of Pennsylvania

Filed Sept. 18, 1968, Ser. No. 760,544
Int. Cl. H01r 9/00; H05k 13/04
U.S. Cl. 29—630 28 Claims

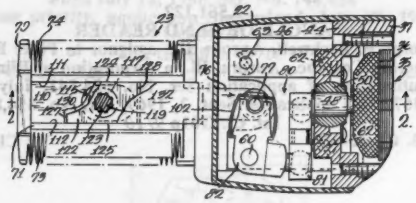


Apparatus and method for applying terminal lugs to a bobbin wherein the bobbin is positioned on an indexing mandrel and the mandrel is intermittently moved along a path to bring the bobbin adjacent a lug applicator where lugs are applied to the top of the bobbin. Further indexing of the mandrel along the path positions the bobbin adjacent a turn station where the bottom is removed from the mandrel, positioned on a pin, rotated through 180° about its axis, and repositioned on the indexing mandrel with the lugs positioned on the bottom of the bobbin. Continued indexing of the mandrel positions the bobbin adjacent a second lug applicator which applies lugs to the unlugged top of the bobbin. Further indexing of the mandrel positions the bobbin at a bending station where the lugs on both the top and the bottom of the bobbin are accurately bent to a desired configuration.

3,561,115
ELECTRIC HAIR CLIPPER

Bernhard Palm, Milwaukee, Wis., assignor to John Oster Manufacturing Co., Milwaukee, Wis., a corporation of Wisconsin

Filed Mar. 29, 1968, Ser. No. 717,347
Int. Cl. B26b *19/02*
U.S. Cl. 30—218 22 Claims

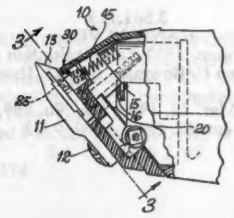


Hair cutting device having the cutter assembly extending forwardly from the housing and the cutter assembly including two spaced rows of cutting teeth parallel to the housing. A linkage arrangement transmits the rotary power from a permanent magnet motor to reciprocate the cutter assembly comprising a reciprocal cutter and a stationary comb. The cutter is biased against the stationary comb by means of a leaf spring which is clamped in a manner to maintain a uniform tension therebetween.

3,561,116
TRANSMISSION MEMBERS FOR ELECTRIC HAIR CLIPPER

John F. Wahl, Sterling, Ill., assignor to Wahl Clipper Corporation, Sterling, Ill., a corporation of Illinois

Filed Oct. 15, 1969, Ser. No. 866,499
Int. Cl. B26b *19/02*
U.S. Cl. 30—220 5 Claims

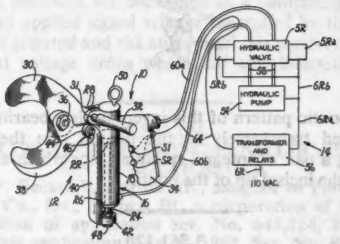


The transmission mechanism in an electric hair clipper driven by a rotary motor includes two members located between the drive shaft and a reciprocating cutting blade which is detachable from the clipper. One member is a spring-biased follower member which is connected to the cutting blade and is driven directly or indirectly by a cam on the drive shaft, and the other is a guide member which has guide surfaces engaged by the follower member, the follower member being guided by the guide member for reciprocating straight line movement. The follower member and the guide member have first and second retaining means which cooperate with each other to hold the follower member in place when the cutting blade is detached from the clipper, thereby facilitating reassembly and preventing possible loss of parts. The guide member is resilient in the region of its retaining means so the latter may be displaced to permit intended removal of the follower member and replacement thereof.

3,561,117
DEHORNER AND HOCK CUTTER

Edwin D. Murbach, Fresno, Calif., assignor to Sierra Meat Co., a corporation of California

Filed July 5, 1968, Ser. No. 742,623
Int. Cl. B26b *15/00*
U.S. Cl. 30—228 1 Claim

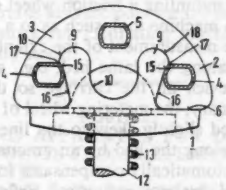


A reliable device for cutting the horn and hock of a slaughtered animal by one person and consisting essentially of a pair of cutter blades relatively movable toward and away from each other, a double acting hydraulic ram operatively connected to the blades for effecting such relative movement in a positive manner, and electrical controls including selectively operable switch means for selectively actuating the hydraulic ram.

3,561,118
CUTTER HEAD FOR DRY SHAVER

Richard Antretter, 9 Karl Stielerstr., 8031 Stockdorf, near Munich, Germany

Filed Jan. 17, 1969, Ser. No. 791,978
Claims priority, application Germany, July 25, 1968, P 17 03 893.6
Int. Cl. B26b *19/06*
U.S. Cl. 30—346.51 8 Claims



Two lower carrying rods are spaced from an upper carrying rod on opposite sides thereof. A plurality of spaced apart knife blades are threaded on said carrying rods. A driver which is made of plastics material comprises a bottom part which is formed with an aperture adapted to receive a driver pin, and cheeks spaced apart in the longitudinal direction of said bottom part and extending upwardly from said bottom part and fitting each between adjacent ones of said knife blades. Said cheeks have outer narrow side faces formed with relieved surface portions in resilient engagement with confronting peripheral surface portions of said lower carrying rods.

3,561,119
PREFORMED ANTERIOR PONTIC PATTERNS

Harry Susman and Jon E. Susman, both of 6439 Prestonshire, Dallas, Tex. 75225

Continuation-in-part of application Ser. No. 566,157, July 18, 1966. This application Feb. 24, 1969, Ser. No. 801,512
Int. Cl. A61c *13/00*
U.S. Cl. 32—2 3 Claims

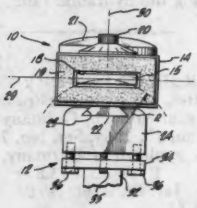
A preformed anterior pontic pattern made from a solid, nondeformable plastic material and shaped generally to

correspond to the lingual portion of an anterior tooth and having engaging means connected on the front section of the pattern for engaging and supporting a labial portion of an anterior pontic. The engaging means for the preferred pontic pattern of this invention is a bearing section positioned transversely to the lingual side thereof and carrying a pair of integral retaining pins which are angled toward the incisal tip of the pontic.

3,561,120
DISTANCE MEASUREMENT WITH FRICTION WHEEL DEVICES

Irven H. Culver, Playa del Rey, Calif., assignor to Primus Mfg., Inc., San Lorenzo, Puerto Rico, a corporation of California

Filed Jan. 24, 1969, Ser. No. 793,856
Int. Cl. G01b *3/12*
U.S. Cl. 33—125 **6 Claims**

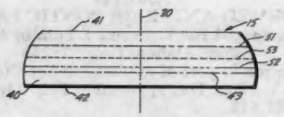


A method for mounting a friction wheel distance measuring device to a machine tool, such as to a lathe carriage, to enable precise measurement of the extent of movement of the carriage along the lathe bed, e.g., which includes mounting the device on the carriage so that, when the carriage is stationary, the metering wheel of the measuring device is mounted slightly skew to the line of movement of the carriage along the bed by an amount and in a direction which automatically compensates for repeatability errors generated by non-reciprocal deflections of the carriage and the supporting bracketry of the measuring device.

3,561,121
DISTANCE MEASUREMENT WITH FRICTION WHEEL DEVICES

Irven H. Culver, Playa del Rey, Calif., assignor to Primus Mfg., Inc., San Lorenzo, Puerto Rico, a corporation of California

Continuation-in-part of application Ser. No. 793,856, Jan. 24, 1969. This application Apr. 7, 1969, Ser. No. 813,851
Int. Cl. G01b *3/12*
U.S. Cl. 33—125 **4 Claims**

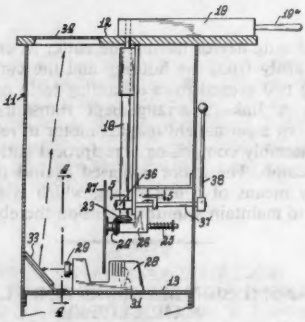


The periphery of the metering wheel of a friction wheel distance measuring device has a parti-spherical configuration and has its maximum diameter more proximate to one end face of the wheel than to the other end face to enable disposition of the wheel to compensate for measurement errors produced by metal elastic crawl in a measurement surface engaged by the wheel and to compensate for repeatability errors produced by non-reciprocal deflections in structure to which the device is mounted in use.

3,561,122
ANGLE OF BEND READER

George F. Beckwell, Aurora, Ill., assignor to Pines Engineering Co., Inc., Aurora, Ill., a corporation of Illinois

Continuation of application Ser. No. 654,541, July 19, 1967. This application Sept. 2, 1969, Ser. No. 854,803
Int. Cl. G01p *9/10*
U.S. Cl. 33—75 **2 Claims**

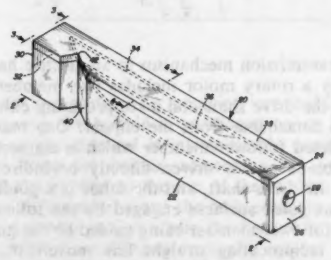


Apparatus including a protractor disc and a lens system for visually recording on a screen the angle of bend present in a piece of tubular, rod or like stock.

3,561,123
HAND LEVEL

Clifford G. Bowman, 3527 Talbott St., San Diego, Calif., 92106, and Don C. Bowman, Box 41, Round Mountain, Nev. 89045

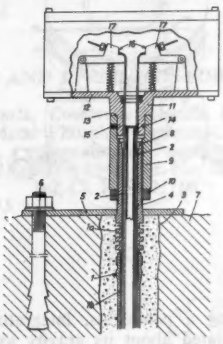
Filed Mar. 24, 1969, Ser. No. 809,797
Int. Cl. G01c *5/00, 9/32*
U.S. Cl. 33—73 **10 Claims**



A hand level formed principally of an elongated, substantially transparent element, the front of which carries a peephole and the rear a peep sight. The element provides a generally flat, vertically disposed, horizontally elongated reservoir which extends substantially parallel and at one side of a straight line between the peephole

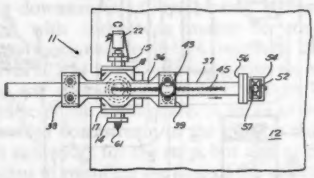
and peep sight. The reservoir contains a colored liquid. A light reflecting surface is positioned to reflect light from the liquid through the peephole.

3,561,124
ATTACHMENT MEANS FOR THE MEASURING HEAD OF AN EXTENSOMETER
Bernardus Josephus Brugman, Gumligen, Switzerland, assignor to Losinger & Co. A.G., Bern, Switzerland
Filed July 12, 1968, Ser. No. 744,454
Claims priority, application Switzerland, July 27, 1967, 10,659/67
Int. Cl. E21b *49/00*
U.S. Cl. 33—125 **2 Claims**



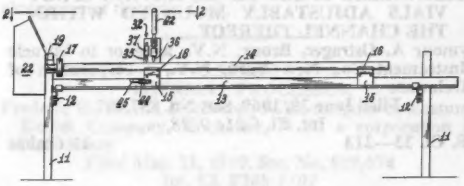
An attachment means for securing the measuring head of an extensometer at a stationary throughbored connecting piece arranged at an extension of the borehole cable which comprises a tensioning sleeve which has one end threaded onto the connecting piece and its other end rotatably supported at the measuring head.

3,561,125
THREE-DIMENSIONAL POSITION INDICATING SENSOR
Herman R, Zeidler, Farmingdale, N.Y., assignor to Linear Motion Technology, Inc., Farmingdale, N.Y., a corporation of New York
Filed Feb. 23, 1968, Ser. No. 707,576
Int. Cl. G01b *7/00*
U.S. Cl. 33—174 **13 Claims**



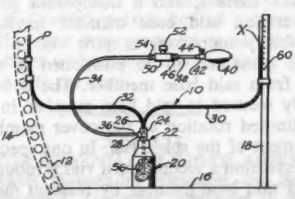
A three-dimensional calipering device for sensing the location of a point by spherical coordinates, wherein a typical example of the device consists of a horizontal supporting table on which a gimbal bracket is swivelled for rotation on a horizontal axis. The bracket carries a gimbal member swivelled thereon for rotation on an axis normal to the first-named axis. A range arm is slidably-mounted in the gimbal member and carries a contact sensor at its end. The range arm is coupled to an electrical resolver giving an electrical "range" read-out corresponding to the amount of extension of the range arm in the gimbal member. The gimbal bracket and gimbal member are respectively coupled to electrical resolvers giving read-outs corresponding to the angular rotations of the gimbal bracket and gimbal member around their respective axes of rotation. The resolvers are connected in a computing circuit wherein an applied signal voltage controlled by the range resolver is inserted and the angle resolvers produce respective signal voltage drops which are also inserted in the circuit.

3,561,126
APPARATUS FOR MARKING BEND LOCATIONS ON TUBULAR STOCK
George F. Beckwell, Aurora, Ill., assignor to Pines Engineering Co., Inc., Aurora, Ill., a corporation of Illinois
Continuation of application Ser. No. 645,126, June 12, 1967. This application Aug. 6, 1969, Ser. No. 861,213
Int. Cl. B23b *49/02*
U.S. Cl. 33—189 **12 Claims**



Apparatus for laying out reference points for bends to be made in tubular stock, which includes a support for such stock and a visual calibrated reader connected with said stock for indicating its rotational position on the support. The apparatus also includes means slidable along the length of the stock for facilitating marking of points of reference on said stock.

3,561,127
METHOD AND APPARATUS FOR DETERMINING REMOTE POINTS FROM REFERENCE POINT BY LIQUID LEVEL
Ronald A. Du Bose, Atlanta, Ga.
(866 Parkway Drive, Smyrna, Ga. 30080)
Filed May 17, 1968, Ser. No. 730,008
Int. Cl. G01c *5/04*
U.S. Cl. 33—209 **12 Claims**



To locate one or more points accurately from a base reference point such as locating positions on an aircraft structure during construction or repair where optical location is impractical, liquid in a tank that can be pressurized is piped and indexed at the base location and then one or more conduits such as flexible, clear plastic

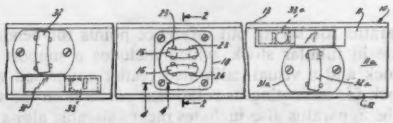
tubing are run to the remote points and then the container is pressurized to bring the liquid to the reference point which also brings the liquid to the remote point to be located whereat it may be stopped by holding the pressure at that point. A typical apparatus for practicing the present method would include a pressure vessel such as a paint spray tank having a quick-connect-fitting on the top and contains a supply of liquid such as 80% dyed water and 20% alcohol. A Y fitting on the quick-connect-fitting leads by a plastic tube to the reference point from one branch of the Y into the remote point from the other branch of the Y. A hand operated rubber bulb squeeze pump with bleed valves and fine control needle valve is connected to the tank and is pumped by hand to pressurize the tank to drive the liquids into the respective lines and when the level of the liquid in the lines is approximately of the desired level, the fine control valve is operated to bring the reference point to exact level and the remote point will then be properly located and may be marked after which the equipment is removed.

3,561,128

CHANNELED SPIRIT LEVEL HAVING SPIRIT VIALS ADJUSTABLY MOUNTED WITHIN THE CHANNEL THEREOF

Seymour A. Ostrager, Bronx, N.Y., assignor to Miracle Instrument Co., New York, N.Y., a corporation of Delaware

Filed June 30, 1969, Ser. No. 837,467
Int. Cl. G01c *9/28*
U.S. Cl. 33—213 **12 Claims**



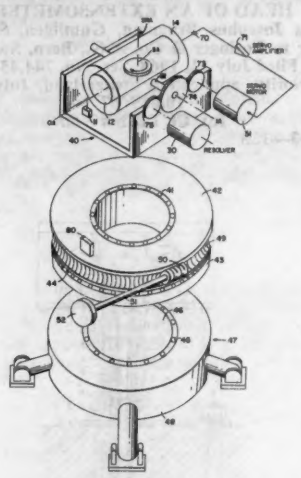
In a spirit level comprising an elongated channeled frame defined by a web and parallel side walls extending perpendicularly from one surface of said web, with one of said side walls extending beyond said web to provide a flange disposed perpendicularly to the opposed side of said web, means is provided for adjustably mounting spirit vials in connection with said web in a manner to be completely housed within the channel of said frame. The mounting means includes a base member of transparent plastic material detachably secured to the web portion of the frame and having a spirit vial receiving recess in the outer face thereof, and a transparent plastic cover member overlying said base member having resilient means for firmly supporting a spirit vial in connection therewith in a manner to be positioned in said recess and spaced from said base member. The cover member is detachably secured to said base member in a manner to provide limited rotation of the cover member for accurate alignment of the spirit vial. In one special adaptation of the invention a second spirit vial is mounted within the recess of said base member by resilient means securing the same to said base member and adjustably by limited rotation of the base member. In another special adaptation a second vial is adjustably mounted on an extension along one side of the base member and oriented perpendicularly to said web, and said extension supports an angled mirror so positioned that the first vial and the mirror image of said second vial are in substantial alignment.

3,561,129

NORTH-SEEKING SYSTEM

James V. Johnston, Madison, Ala., assignor to the United States of America as represented by the Secretary of the Army

Filed Dec. 27, 1966, Ser. No. 605,110
Int. Cl. G01c *19/38*
U.S. Cl. 33—226 **3 Claims**



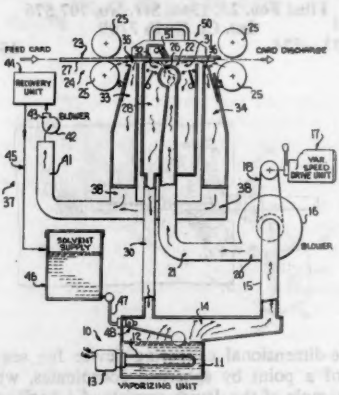
A system using a pendulous, integrating, gyroscope accelerometer rotated about its gravity axis, in a level plane on the earth. The rotation velocity of the earth causes the pendulous mass to exert a varying precessional force on the gyroscope. The force is detected and correlated with the angular position of the accelerometer to determine north.

3,561,130

METHOD AND APPARATUS FOR FIXING DEPOSITED MEDIUM BY VAPOR APPLICATION

Raymond F. Galitz, La Grange, Ill., assignor to Continental Can Company, Inc., New York, N.Y., a corporation of New York

Filed Aug. 28, 1968, Ser. No. 755,889
Int. Cl. F26b *13/00*
U.S. Cl. 34—23 **31 Claims**



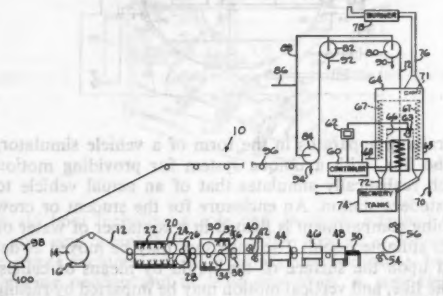
Method and apparatus for fuzing printing or coating material upon conveyed articles by the application of hot solvent vapors is disclosed herein. A vaporizing unit is

connected for the supply of solvent vapor to a vapor knife including a hollow tubular resilient member having an elongate vapor emission slot and contractible toward its longitudinal axis for varying the slot width. Recirculation provisions withdraw vapor from adjacent the knife for subsequent reapplication and reclaiming provisions withdraw vapor bi-passing the recirculation provisions to return a portion of the vapor to its liquid state for subsequent vaporization. The reclaiming provisions also draw in air to prevent passage of air into the recirculation path and cover provisions overlie the knife and include a pivotal gate movable by articles in transit past the knife. The gate diverts emitted vapors to the recirculation provisions absent the presence of an article proximate the knife, masks the leading edge of articles conveyed into proximity with the knife and contacts a surface of the articles during transit past the knife to aid in the proper positioning of such articles.

3,561,131
METHOD AND APPARATUS FOR COATING METAL STRIPS

LeRoy O. Swartz, Cornwells Heights, Pa., assignor to Cornwells Metal Finishing Company, Inc., Cornwells Heights, Pa., a corporation of Pennsylvania

Filed Sept. 10, 1968, Ser. No. 758,896
Int. Cl. F26b *21/06*
U.S. Cl. 34—73 **7 Claims**



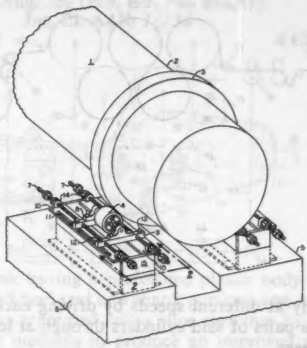
An apparatus for applying a coating to a metal strip whereby the metal strip is first pretreated to condition it for application of the coating, after which the coating is applied to either one or both sides of the strip. Thereafter, the coated strip passes through a heating station where it is heated by means of electromagnetic induction. A hood surrounds the induction heating means so that the vaporized solvents and other fumes are prevented from passing into the atmosphere and over the coated metal strip downstream of the heating station. A hood is provided with condensing means to condense the vaporized solvents and to permit recovery of the condensed solvents, and is also provided with an afterburner to burn up any uncondensed vapors or gases to prevent contamination of the atmosphere. A series of cooled rollers are provided downstream of the heating means to not only act as conveyors for the strip, but also as progressive cooling means to complete the cure of the coating.

3,561,132
CARBON BLACK DRYING APPARATUS

John W. La Grone, Borger, Tex., assignor to Phillips Petroleum Company, a corporation of Delaware

Filed Sept. 10, 1969, Ser. No. 856,751
Int. Cl. F26g *11/02*
U.S. Cl. 34—108 **5 Claims**

Apparatus is disclosed which comprises a rotary carbon black drier, subjected to permanent elongation of its metallic shell, in combination with trunnion supports positioned in relation to a flange extending circumferentially to, and outwardly from, the drier shell, the trunnions

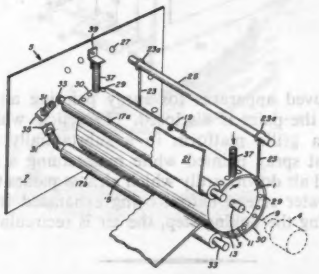


being movably positionable along the length of the drier coincidental with the repositioning of the flange upon elongation of the drier shell.

3,561,133
THERMAL PROCESSOR

Frederic D. Hauck, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y., a corporation of New Jersey

Filed Mar. 21, 1969, Ser. No. 809,074
Int. Cl. F26b *1/02*
U.S. Cl. 34—110 **8 Claims**



A thermal processor for heating web material in a well-known manner between a rotating drum and a mating, non-rotating, semi-rigid resilient shell. A pivotally connected support means holds the shell in "floating" relationship with the drum. Such relationship is achieved by the use of links which pivotally connect the support means and shell which permit limited movement of any portion of the shell in a generally radial direction relative to the drum while preventing the shell, as a whole, from rotating with the drum.

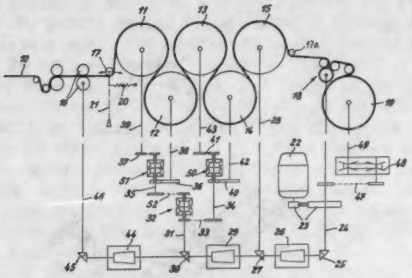
3,561,134
DRIVE FOR DRYING CYLINDER ASSEMBLIES

Walter Krückels, Hausen im Wiesental, and Erich Gorissen, Mohrenblick, Germany, assignors to Maschinenfabrik Zell J. Krückels K.G., Zell (Wiesental), Germany, a firm

Filed Oct. 14, 1968, Ser. No. 767,400
Claims priority, application Germany, Oct. 14, 1967, P 17 29 422.3
Int. Cl. F26b *11/04*
U.S. Cl. 34—121 **2 Claims**

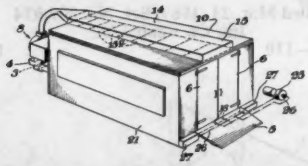
The invention provides a drive for drying cylinder assemblies upon which there can be dried a band material,

particularly textile webs or bands of filaments, that changes its length as it dries. This drive comprises a single motor for driving the several cylinders of a drying cylinder



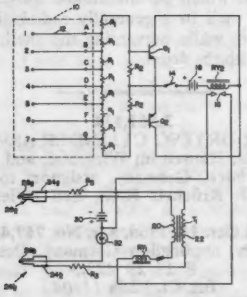
assembly at different speeds by driving each pair of consecutive pairs of said cylinders through at least one differential gear.

3,561,135
APPARATUS FOR PAINTING AND BAKING AN ARTICLE
Peter Fulford, 13 Liverpool Road, Kingston-on-Thames, Surrey, England
Continuation of application Ser. No. 456,635, May 18, 1965. This application Nov. 18, 1968, Ser. No. 778,008
Int. Cl. F26b *19/00, 25/06*
U.S. Cl. 34—224 **5 Claims**



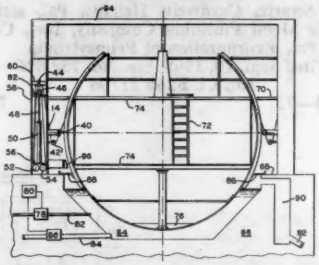
An improved apparatus for spray painting an article and baking the paint is disclosed. The article while supported on a grille platform in a substantially airtight booth is first spray painted while maintaining a flow of fresh filtered air downwardly which airflow passes through a flowing water screen before being exhausted from the booth. During the baking step, the air is recirculated and heated.

3,561,136
QUESTION AND ANSWER GAME
Andrew Lloyd Solow, 5743 Rhodes Ave., North Hollywood, Calif. 91607
Filed June 25, 1968, Ser. No. 739,787
Int. Cl. G09b *7/00*
U.S. Cl. 35—9 **8 Claims**



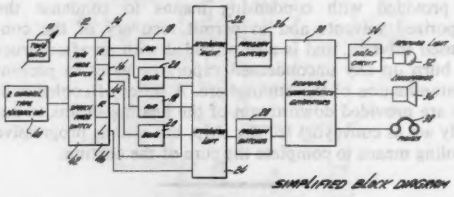
A question and answer game in which the techniques of reinforced learning are employed to provide an educational and yet amusing game. Questions and multiple choice answers are arranged on a coded card which is connected to an electronic circuit having a pair of hand held probes connected thereto. The probes are used to match a question and an answer for the multiple choice group, the selection of a correct answer being operative to energize an appropriate indicator, while the selection of any erroneous answer is operative to shock the player by means of a shocking potential applied to the handles of the probes and/or a derogatory noise heard in conjunction with the shock.

3,561,137
TRAINING APPARATUS WITH HYDROSTATIC MOTION SYSTEM
Andre J. Guyon and David O. Gorgol, Binghamton, N.Y., assignors to Singer-General Precision, Inc., Binghamton, N.Y., a corporation of Delaware
Filed Nov. 1, 1968, Ser. No. 772,734
Int. Cl. G09b *9/06*
U.S. Cl. 35—11 **3 Claims**



Training apparatus in the form of a vehicle simulator, or the like, with a unique system for providing motion which realistically simulates that of an actual vehicle to the student station. An enclosure for the student or crew training compartment is floated in a container of water or other suitable liquid. The enclosure may be moved as desired upon the surface of the liquid by means of cables, or the like, and vertical motion may be imparted by raising or lowering the liquid level within the container.

3,561,138
AUDIOMETRY TRAINING UNIT
Francis I. Catlin, Towson, and Robert N. Glackin, Jr., Cockeysville, Md., assignors to The Johns Hopkins University, Baltimore, Md., a corporation of Maryland
Filed Nov. 7, 1969, Ser. No. 874,806
Int. Cl. G09b *25/00*
U.S. Cl. 35—13 **11 Claims**



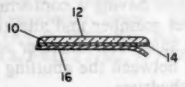
Audiometry Training Unit primarily directed to a technician teaching machine using programmed instruction and/or simulation techniques to provide a trainee with experience in the theory and practicum of the evaluation of hearing, in the absence of live human test subjects. The unit facilitates practicing and following an actual testing procedure and contemplates different arrangements of simulation devices and/or techniques in

the methodology of hearing evaluation in human test subjects to selectively provide a variety of pre-programmed simulated test subject responses which can conform to actual live human test subject response characteristics. Instructor or programmer control of the simulated characteristics is incorporated. The unit is adaptable for, and useful in, testing of hearing by pure-tone techniques including pure-tone audiometry, hearing for speech, speech intensity, subject response measurements, speech reception threshold, speech discrimination tests, and other normal testing procedures. The system includes a variable patient response circuit to more precisely implement test procedures simulating actual audiometry testing.

3,561,139
SKI BOOT AND STAY THEREFOR
Donald W. Stillman, 8215 Tuscany Ave., Playa Del Rey, Calif. 90291
Filed Aug. 25, 1969, Ser. No. 852,787
Int. Cl. A41b *00/00*
U.S. Cl. 36—2.5 **12 Claims**

A ski boot including a sole and an upper attached to the sole and adapted to receive the foot of a wearer. The upper includes an ankle embracing portion, a foot embracing portion and at least one strap. A semi-rigid load distribution member is retained between the strap and the ankle of the wearer to distribute the load applied by the strap to the forward portion of the ankle.

3,561,140
SHOE SOLE SAFETY DEVICE
Frederick T. Ludwig, 2574 Chester Road, Columbus, Ohio 43221
Filed June 16, 1969, Ser. No. 833,557
Int. Cl. A43b *23/28*
U.S. Cl. 36—59 **8 Claims**

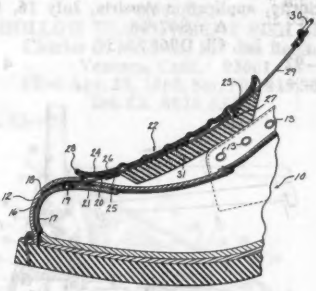


A thin, non-skid patch adhered to the bottom of a shoe sole and having a softness sufficient that it will wear away within a few days or a few weeks of use. The preferred patch is provided with a pressure-sensitive adhesive on one side which is covered by release paper. The release paper is pulled away from the adhesive so that the patch may be applied on the relatively smooth surface of the sole of a new shoe. The preferred patch is transparent so that it will not be noticeable on the sole of the shoe and may be provided with ridges to increase its non-skid characteristics. The patch may be made of a thermoplastic such as a flexible polyvinyl chloride film.

3,561,141
PRE-FORMED SHOE INSOLE
Jacob W. Brown, Cincinnati, Ohio, assignor to Vulcan Corporation, Cincinnati, Ohio, a corporation of Ohio
Filed Aug. 25, 1969, Ser. No. 852,577
Int. Cl. A43b *13/38*
U.S. Cl. 36—44 **4 Claims**

An insole blank having a preformed plastic body with structurally joined heel seat and shank portions and which can be directly incorporated into a shoe structure by conventional lasting methods to produce an improved shoe.

3,561,142
SAFETY SHOES
Henry W. Streit, Sr., Abingdon, Md., and Robert E. Becker, Merrill, Wis., assignors to The Weinbrenner Shoe Corporation, Merrill, Wis., a corporation of Wisconsin
Filed Aug. 11, 1969, Ser. No. 849,015
Int. Cl. A43b *13/22*
U.S. Cl. 36—72 **8 Claims**

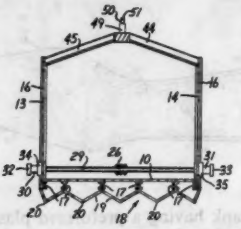


A strip of spring steel is connected at its forward end to the metal toe of a safety shoe, the strip projecting through a slit in the leather toe covering and upwardly through a metal guide on the underside of the lower portion of an instep guard, the guide being positioned to engage over the rear of the metal toe to provide a force-transmiting projection whereby a blow on the instep guard is transmitted to the metal toe, the spring steel strip forming a hinge connection for the instep guard.

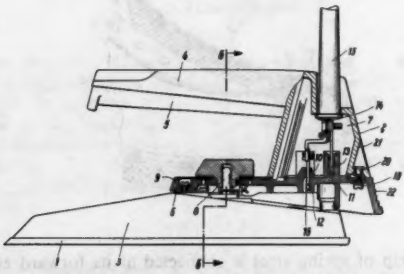
3,561,143
DRAG LINE BUCKET WITH CORRUGATED BOTTOM
Joseph Lockhart, Rte. 2, Twisp, Wash. 98856
Filed Aug. 19, 1968, Ser. No. 753,457
Int. Cl. E02f *3/81*
U.S. Cl. 37—135 **4 Claims**

A drag line bucket is arranged with a haul cable leading from the front end, a haul back cable leading from the rear end and a tilt control connected to a top frame on the bucket. The bucket has a rectangular back wall and a rectangular floor with a scraper blade at the front edge of the floor. Upright side walls extend up from the side edges of the floor and their front ends are provided with

rocker shaped runners to lift the blade above the ground when the bucket is tipped forward. Beneath the floor of the bucket is a corrugated ground engaging bottom that has a short upwardly inclined front end joining the floor at the scraper blade. This corrugated bottom is rounded upward at the back and the corrugations gradually diminish to nothing about midway up the back wall. The haul back cable is attached to the rear of the bucket by a bridle about midway between the top and the bottom of the bucket. The corrugated bottom and the floor are separated by beams which run from front to back and extend up the back wall.



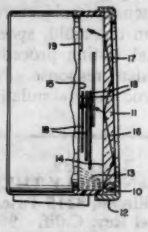
3,561,144
ELECTRIC IRON
Heinz Pichl, Offenbach am Main, Germany, assignor to Rowenta-Werke Gesellschaft mit beschrankter Haftung, Offenbach am Main, Germany, a company of Germany
Filed July 9, 1969, Ser. No. 840,311
Claims priority, application Austria, July 16, 1968, A 6,847/68
Int. Cl. D06f *75/34*
U.S. Cl. 38—92 **4 Claims**



The invention is concerned with electric irons and is directed primarily to the handle which has upper and lower portions which fit one within the other and are secured to a cover plate by a single screw and mating projection and recesses. Cavities are provided in the handle for electrical connections, the cavities being closed at the base of the handle by the cover plate.

3,561,145
LIGHT DISTRIBUTING LENS SYSTEM
Henry E. Shotwell, Berwick, Pa., assignor to United States Radium Corporation, Morristown, N.J., a corporation of Delaware
Filed Mar. 5, 1968, Ser. No. 710,590
Int. Cl. G09f *13/18*
U.S. Cl. 40—130 **1 Claim**

A light distributing lens system for illuminating a display which employs a tapered three dimensional wedge-shaped panel member of substantially transparent material having a first planar surface proximate to the display and a second planar surface distal from the display so disposed in front of the display to be illuminated that the first planar surface is parallel to the display and the second planar surface is set at a slight angle to the display. The system also employs a light source encased in a recess in the thicker base portion of the tapered wedge-shaped panel member and an opaque frame intimately



supporting the periphery of the tapered wedge-shaped panel member in a manner to obscure the light source from external view but to permit the projection of light rays from the light source onto the display directly as well as indirectly through internal reflection from the entire first planar surface of the tapered wedge-shaped panel member.

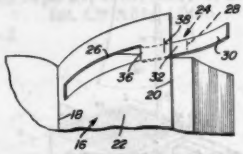
3,561,146
PHOTOGRAPH DISPLAY APPARATUS
Robert H. Dembar, Croton, N.Y., assignor to Graphicana Corp., Ossining, N.Y.
Filed Aug. 5, 1969, Ser. No. 847,696
Int. Cl. G09f *1/12*
U.S. Cl. 40—152 **5 Claims**

The present invention pertains to a photograph display apparatus and more particularly to a device for mounting and displaying photographic prints and other desired pictorial representations. The apparatus comprises a translucent outer member preferably formed of plastic whose geometric configuration is that of a polyhedron and an inner opaque member preferably formed of resilient polyurethane foam and having a conformal configuration with that of the outer member and adapted to be removably inserted within said outer member with photographs positionally secured between the abutting surfaces of said complementary polyhedrons.

3,561,147
BOOK INDEX
Jose Valencia, 1198 S. Van Ness Ave., San Francisco, Calif. 94110
Filed June 17, 1969, Ser. No. 834,053
Int. Cl. B42f *21/02*
U.S. Cl. 40—360 **9 Claims**

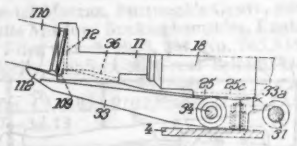
A prefabricated insert-leaf, with or without printed matter and adapted to be mounted between the leaves of a telephone or similar directory, dictionary or the like and having an elongated flexible struck out ribbon-like tongue.

This tongue embodies like half-portions which can be folded and creased to provide several companion plies providing a finger-grippable suitably lettered book indexing tab. The outwardly folded tongue has reversely folded



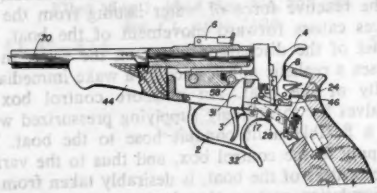
second and third plies, the second ply being threaded through an appropriate precut slit and the free or terminal ply being sandwiched between coordinating portions of the first and second plies to provide a triple ply tab.

3,561,148
EJECTION SYSTEM FOR A FIREARM
Bernard Maillard, Geneva, Switzerland, assignor to Brevets Aero-Mecaniques S.A., Geneva, Switzerland, a society of Switzerland
Original application Apr. 1, 1968, Ser. No. 717,524, now Patent No. 3,447,418, dated June 3, 1969. Divided and this application Oct. 21, 1968, Ser. No. 810,863
Claims priority, application Luxemburg, July 31, 1967, 54,210
Int. Cl. F41c *15/00*
U.S. Cl. 42—25 **1 Claim**



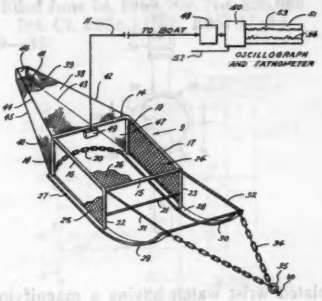
The injection system includes an extractor carried by the movable breech mechanism and, diametrically opposite, an ejector carried by the breechcase. The front of the ejector has a transverse striking surface for the rear edge of the cartridge case to be ejected. The ejector is controlled by the breech mechanism so as to present the striking surface against the rear edge during the recoil of the breech mechanism. At the front of the striking surface is a projection which strikes the lateral surface of the cartridge case transversely before the impact of the striking surface with the rear edge. This tips the cartridge case before the impact in the direction of the ejection passage, thus attenuating the violence of this impact.

3,561,149
PISTOL WITH MEANS ACTUATING THE BARREL LATCH AND SETTING THE TRIGGER MECHANISM AND SAFETY
Warren A. Center, Laurel Drive, Westminster, Mass. 01473
Filed Oct. 9, 1968, Ser. No. 766,156
Int. Cl. F41c *11/02, 17/00, 19/00*
U.S. Cl. 42—41 **9 Claims**



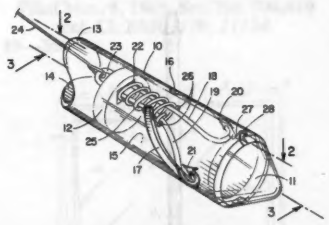
A pistol having a horn associated with the trigger guard for opening the breech and having separate means for locking the trigger and cocking the hammer.

3,561,150
MEANS AND METHOD FOR LOCATING SHRIMP AND LIKE MARINE ANIMALS
Albert B. Silchenstedt, Box 255, Rockport, Tex. 78382
Continuation-in-part of application Ser. No. 767,781, Oct. 15, 1968. This application July 31, 1969, Ser. No. 846,545
Int. Cl. A01k *73/02*
U.S. Cl. 43—4.5 **5 Claims**



A try net is provided with an acoustic-electrotransducer which transmits electrical oscillations to a remote filter device. The filter device is tuned to isolate the characteristic vibrations produced by selected marine animals and the signals therefrom are transmitted to an indicator.

3,561,151
HOLLOW TRANSPARENT FISH LURE
Charles C. NeHoda, 127 San Benito, Ventura, Calif. 93001
Filed Apr. 25, 1969, Ser. No. 819,301
Int. Cl. A01k *83/02*
U.S. Cl. 43—35 **6 Claims**



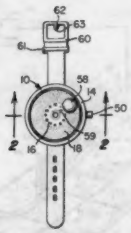
A fish lure in the form of an elongated cylindrical hollow member preferably transparent and provided with a removable nose piece for enabling bait to be inserted in the hollow interior of the member. Wall portions of the member include slots through which hooks disposed normally within the member are caused to pass through when a line passing into a rear partition in the member and attached to the hooks is pulled to move the hook means within the member. The hook means are thus normally encased within the member but when a fish bites on the lure, the line tension causes the hook means to be exteriorly exposed to snag the fish.

3,561,152
BIOCIDAL FUEL COMPOSITIONS
Roman W. Kulow, Cheshire, Conn., assignor to Olin Corporation, a corporation of Virginia
No Drawing. Filed Mar. 4, 1968, Ser. No. 709,958
Int. Cl. C10l *1/24*
U.S. Cl. 44—63 **8 Claims**

Biocidal fuel compositions have been disclosed which comprise a liquid hydrocarbon fuel containing a biocidal-

ly effective amount of selected amine salts of 2-mercaptopyridine-1-oxide.

3,561,153
PICTORIAL TOY WRIST WATCH
David R. Harper, Nashville, Tenn., assignor to Kusan, Inc., Nashville, Tenn., a corporation of Kentucky
Filed Jan. 23, 1969, Ser. No. 793,331
Int. Cl. A63h *33/30*
U.S. Cl. 46—1 **9 Claims**



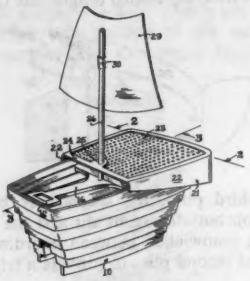
A simulated wrist watch having a magnifying portion in the crystal which is manually rotatable over a fixed dial to successively uncover circumferentially spaced, display areas such as single pictures of a child's activities, the pictures and their subject matter being correlated physically and timewise with the twelve visible dial markings.

3,561,154
BUBBLE PIPE OR BLOWER
Riley Skinner, Paterson, N.J., assignor to Span Products, Inc., Paterson, N.J.
Filed Feb. 23, 1968, Ser. No. 707,609
Int. Cl. A63h *33/28*
U.S. Cl. 46—6 **2 Claims**

A bubble pipe or blower which is provided at its working or forward end portion with a rewettable, concentrated bubble-forming solution or substance in substantially dry form or condition. The internal wall of the blower is impregnated with the concentrated bubble solution, which upon drying and when rewetted with water forms a film suitable for blowing bubbles.

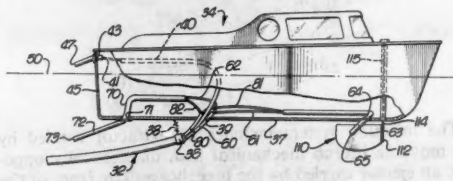
3,561,155
TAKE-APART TOY
Sidney A. Tarrson, Chicago, Ill., assignor to Sidney A. Tarrson Co., Dowagiac, Mich., a corporation of Illinois
Filed Mar. 28, 1969, Ser. No. 811,546
Int. Cl. A63h *33/06*
U.S. Cl. 46—17 **6 Claims**

A compact take-apart toy having a basic structure made up of a plurality of separate individual toys usable as such, the toy having a high degree of play and educational value by stimulating the child's imagination to



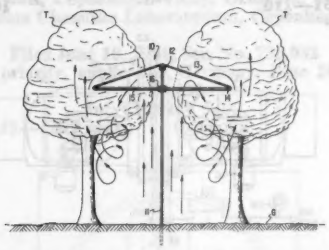
assemble and disassemble the toy from and into the basic assembly.

3,561,156
AQUATIC TOY
Myron Tobias, Woodland Hills, and Anthony J. Russo, Los Angeles, Calif., assignor of five percent to Jordan M. Wank, Hollywood, Calif.
Filed Apr. 4, 1969, Ser. No. 813,542
Int. Cl. A63h *23/06*
U.S. Cl. 46—93 **8 Claims**



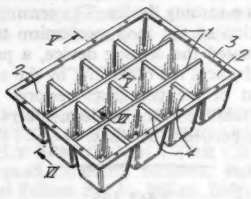
An aquatic toy including a small boat and on-shore means controlled by the user for supplying pressurized water to selected discharge orifices on the boat for propulsion and steering while floating on a body of water such as a swimming pool, and employing pressurized water from the pool recirculation system. The boat has a rudder pivotal about a forward vertical axis, and a pair of fore discharge orifices so oriented relative to the rudder as to cause the rudder to deflect away from its neutral position when only one of the discharge orifices is supplied with pressurized water; hydraulically paralleled with each fore orifice is an aft orifice directed at a lateral angle opposite that of its fore orifice, to provide a force couple when water issues from a paralleled set of fore and aft orifices. The stern of the boat includes also a pair of laterally spaced generally rearwardly directed orifices, desirably above the water line, and means are provided to selectively supply pressurized water simultaneously to them. The reactive force of water issuing from the latter orifices causes forward movement of the boat, and the impact of the discharged water on the water in the pool causes a realistic appearance of a wake immediately rearwardly of the boat. An on-shore control box includes valves for throttlingly supplying pressurized water through a flexible multi-conduit hose to the boat. The water supply to the control box, and thus to the various discharge orifices of the boat, is desirably taken from the pool recirculation system, thereby not only maintaining the proper amount of water in the pool, but also enabling the present invention to be energized without a separate source of power.

3,561,157
FROST PREVENTION METHOD AND APPARATUS
Gabriel V. de Lizasoain, Rockville, Md., assignor to Tecnico, Inc., Washington, D.C., a corporation of the District of Columbia
Filed Sept. 29, 1967, Ser. No. 671,780
Int. Cl. A01g *13/06*
U.S. Cl. 47—2 5 Claims



Heat radiated from the sun and absorbed by the air and ground within the confines of an orchard is utilized during periods of freeze by a "greenhouse" effect which keeps the ambient air within the orchard at a temperature that prevents frost damage.

3,561,158
SEED TRAYS
Betty Muriel Marcan, Burrough's Grove, Pump Lane, Little Marlow, Buckinghamshire, England
Filed Oct. 8, 1968, Ser. No. 765,835
Claims priority, application Great Britain, Oct. 9, 1967, 46,067/67
Int. Cl. A01g *9/02*; B65d *21/02, 1/36*
U.S. Cl. 47—34.13 5 Claims

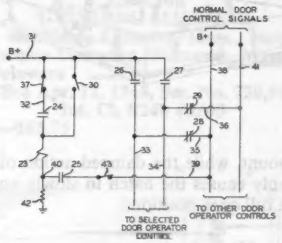


A seed tray formed from synthetic plastics material and comprising a plurality of small containers joined together, the outside and intermediate dividing walls defining the containers being of different depths whereby flexing of the tray as a whole is inhibited or limited to a substantial degree.

3,561,159
SEED CAPSULE AND METHOD OF MAKING SAME
William J. Adams, Jr., San Jose, Calif., assignor to FMC Corporation, San Jose, Calif., a corporation of Delaware
Filed May 1, 1968, Ser. No. 725,688
Int. Cl. A01c *1/06*
U.S. Cl. 47—57.6 5 Claims

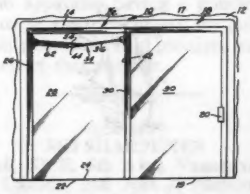
Seed capsules are formed by preparing a charge of seed bed materials, such as vermiculite and binder, compressing the charge to form a base capsule segment having a recess therein, drying the base segment, placing a seed in the recess, and closing the recess to form a seed-containing cavity by securing to the base a cover that has been prepared in the same manner as the base, or by securing a sheet or strip member of paper or plastic to the base.

3,561,160
CREW SWITCH FOR CONTROLLING A DOOR OPERATOR
William Chan, Park Ridge, Ill., assignor to Vapor Corporation, Chicago, Ill., a corporation of Illinois
Filed June 24, 1969, Ser. No. 836,080
Int. Cl. E05c *13/08*; E05f *11/54*
U.S. Cl. 49—35 7 Claims



Crew switch for a train car to enable opening and closing of an individual door from either a key operated station located outside the car or a key operated station located inside the car, and closing of a door by the master door control following opening of that door at a remote key operated station, wherein a relay actuated switching circuit is provided.

3,561,161
SLIDING DOOR OR PANEL CLOSING MECHANISM
Donald C. Green, 21300 Sommerside Lane, Northville, Mich. 48167
Filed Mar. 5, 1969, Ser. No. 804,610
Int. Cl. E05f *1/08, 11/54*
U.S. Cl. 49—359 5 Claims

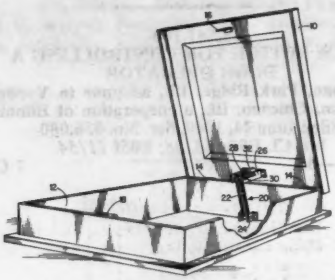


An automatic closing mechanism for a sliding door or panel comprising a collapsible linkage connected between a stationary frame portion and the sliding door or panel, including an extendable link adapted to be loaded upon extension when the sliding door panel is opened to cause automatic contraction of said extendable link to reposition said collapsible linkage and thereby close the sliding door or panel when the opening force is removed.

3,561,162
DOOR OPENING APPARATUS
Maurice J. Goldman, 382 Massapoag Ave., Sharon, Mass. 02067
Filed June 16, 1969, Ser. No. 833,641
Int. Cl. E05f *1/14, 5/02*
U.S. Cl. 49—386 5 Claims

A device for opening a hatch door or other closure in a safe and positive manner. A pair of spring assemblies are coupled between a hatch and its frame, one

spring assembly being cooperative with a viscous damping device. Upon release of the hatch, the first spring assembly causes the hatch to rapidly open by a predetermined amount, while the damped action of the second spring assembly causes the hatch to slowly and positively continue to a full open position.

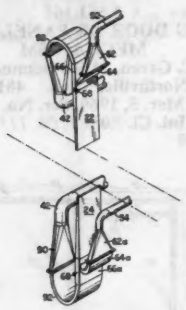


3,561,163

LOW PRESSURE ABRASIVE BLASTING SYSTEM

Ted A. Arnold, Palo Alto, Calif., assignor to Vacu-Blast Corporation, Belmont, Calif., a corporation of California

Filed Jan. 31, 1969, Ser. No. 795,544
Int. Cl. B24c *3/00*
U.S. Cl. 51—8 **12 Claims**



An abrasive blasting apparatus comprising at least one nozzle for producing a relatively wide, sheet-like stream of abrasive particles includes an elongated nozzle having a constant width but a thickness that diminishes from its inlet to its outlet by either an abrupt or gradual taper. A source of relatively low pressure air is supplied to the nozzle and near its inlet a feed hopper constantly supplies abrasive material, by distributing it substantially uniformly across the width of the air stream that enters the nozzle. The low pressure air accelerates the abrasive particles to a velocity at the nozzle exit which is sufficient to accomplish the surface treatment of various materials. The nozzle may be oriented in different positions and articulated in different ways to accomplish treatment of different forms of workpieces.

ERRATUM

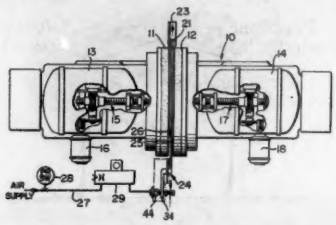
For Class 51—98.5 see:
Patent No. 3,561,096

3,561,164

ABRASIVE ADJUSTMENT CONTROL FOR DOUBLE DISC GRINDER

Elman R. Dunn, Roscoe, Ill., assignor to Litton Industries, Inc., Wayneboro, Pa., a corporation of Delaware

Continuation-in-part of application Ser. No. 529,804, Feb. 24, 1966. This application June 18, 1968, Ser. No. 741,150
Int. Cl. B24b *7/00, 49/00*
U.S. Cl. 51—116 **10 Claims**



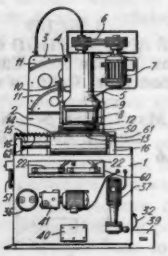
The apparatus of this disclosure relates to disc grinders for grinding thin workpieces which must be held within close limits. As ground workpieces emerge from the machine, they are measured by a post process gaging device. When a change in size of the workpiece indicates the need for adjustment of the discs, the gage may operate a signal or an automatic correcting device to make the necessary change. For the purpose of illustration, the correcting function is initiated by means of a push button. Successive operation of the push button in response to the signal from the post process gage advances one of the discs toward the other by a series of single increments. After a predetermined number of such increments, a counter transfers the subsequent signal or push button contact to effect the advance of the other disc. Thereafter, said other disc is advanced in response to the push button until it engages a sensing device. The sensing device then initiates operation of the feed mechanism to retract the disc which actuated the sensing device, a predetermined distance and advances the other disc by the same amount. This movement of the two discs restores them to the initial position relative to the guide members which direct the workpieces between the discs.

3,561,165

UNIVERSAL GRINDING MACHINE FOR SCISSORS AND SHEARS

Ottorino Visconti, 11, V. Carducci, Milan, Italy

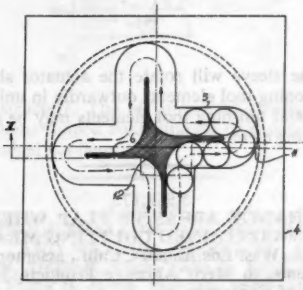
Filed June 28, 1967, Ser. No. 649,587
Claims priority, application Italy, Dec. 22, 1966, 31,407/66
Int. Cl. B24b *7/02, 9/00, 47/06*
U.S. Cl. 51—122 **10 Claims**



A universal grinding machine having a cup grinding wheel carried upon an upright rotary shaft which is movable about a horizontal axis that passes through a working edge of the cup grinding wheel, a horizontally movable slide carrying a pivotal work holder, a driver within the

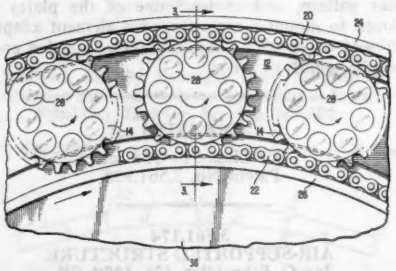
slide for guiding the work holder, and a reservoir for cooling liquid in the base of the machine with continuous filtering for performing flat or hollow grinding, particularly on the blades of scissors, shears, knives and the like.

3,561,166
APPARATUS FOR POLISHING SAMPLES
Kay A. Geels, Copenhagen-Valby, Denmark, assignor to H. Struers Chemiske Laboratorium, Copenhagen, Denmark
Filed June 18, 1968, Ser. No. 738,032
Claims priority, application Germany, June 19, 1967, St 27,023
Int. Cl. B24b 5/00
U.S. Cl. 51—129 1 Claim



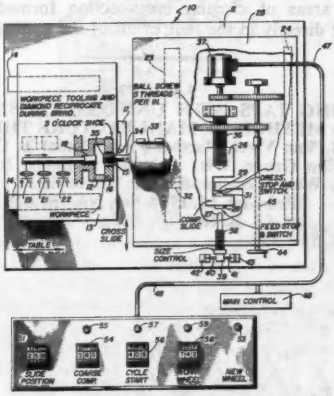
In an apparatus for polishing metallographic samples mounted in cylindrical holders, a stationary disc is mounted above a rotating polishing wheel, which disc has a system of slots and guide rails forming a closed star-like path in which samples resting freely on the polishing surface are caused to roll alternately outwards and inwards by engagement of the sample holders with the guide rails and the walls of the slots.

3,561,167
MACHINE FOR LAPPING ELEMENTS OBTAINED FROM CRYSTALLINE MATERIALS, AND PARTICULARLY SEMICONDUCTOR CRYSTALS
Augusto Borganti, Merano, Bolzano, Italy, assignor to Montecatini Edison S.p.A., Milan, Italy, a corporation of Italy
Filed July 29, 1968, Ser. No. 748,566
Claims priority, application Italy, Aug. 2, 1967, 19,147/67
Int. Cl. B24b 5/18
U.S. Cl. 51—161 8 Claims



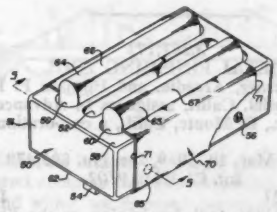
A novel machine for lapping elements obtained from crystalline materials, and particularly semiconductor crystals, is provided which represents a substantial modification of a broadly known type of machine for that purpose employing planetary gears revolving between a central sun gear and an outer ring gear with the elements to be lapped disposed in recesses in the planetary gears between annular lapping plates, the improvement of the present invention comprising the use of a roller or Galle's type chain to actuate the planetary gears instead of the sun and ring gears. In addition, means are provided for maintaining any desired separation of the annular lapping plates between which the planetary gears are disposed, and also a suction cup device for readily removing the finished lapped elements from their recesses in the planetary gears without scoring or damaging the delicate finish on the lapped surfaces of the lapped elements.

3,561,168
GRINDING MACHINE
Edward G. Robillard, Leicester, Mass., assignor to The Heald Machine Company, Worcester, Mass., a corporation of Delaware
Filed Apr. 12, 1968, Ser. No. 720,912
Int. Cl. B24b 49/00
U.S. Cl. 51—165.75 7 Claims



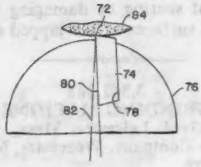
This invention relates to a grinding machine and, more particularly, to apparatus having a grinding cycle regulated by the use of electrical pulses, the pulses serving to regulate not only the cross-feed position, but also operate a visual readout of that position.

3,561,169
SKI SHARPENER
William Pirzek, 53 E. 6th Ave., Vancouver 10, British Columbia, Canada, and Niel J. Nielsen, 62 Morven Drive, West Vancouver, British Columbia, Canada
Filed Sept. 16, 1968, Ser. No. 759,905
Int. Cl. B24d 15/02
U.S. Cl. 51—205 2 Claims



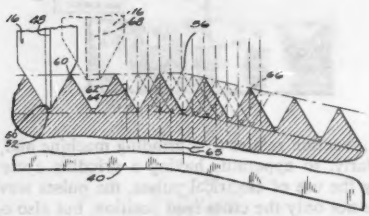
A sharpening tool having a face to slidably engage a guiding surface of a ski and a sharpening element supported perpendicular to the face to remove metal from an adjacent metal edge of the ski.

3,561,170
METHOD OF MAKING INDEXABLE PRE-SPUN CUTTING INSERTS
Hubert Dupuis, Warren, Mich., assignor, by mesne assignments, to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa., a corporation of Pennsylvania
Filed Apr. 30, 1968, Ser. No. 725,445
Int. Cl. B24b *1/00*
U.S. Cl. 51—288 **8 Claims**



Indexable cutting inserts having a multiplicity of successively usable cutting edges, the inserts having preground areas of circular cross-section formed by spin grinding directly in the rear of all of the cutting edges.

3,561,171
SWAGING TAPS WITH UNIFORM CREST WIDTH AND METHOD OF MANUFACTURE THEREOF
John M. Van Vleet, Hartland, and Daniel T. Dobrogowski, Elm Grove, Wis., assignors to Balax, Inc., North Lake, Wis., a corporation of Wisconsin
Filed Aug. 14, 1968, Ser. No. 752,669
Int. Cl. B24b *1/00;* **B23g** *5/06, 7/00*
U.S. Cl. 51—288 **5 Claims**

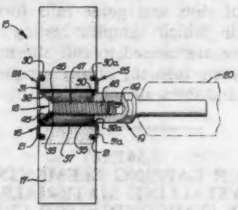


Swaging taps with tapered lead sections should be provided with thread crest of uniform width throughout the generally cylindrical portion, the lead portion and the transition from the tapered portion to the generally cylindrical portion of the tap. The method of achieving crests of uniform width involves the use of a different cam to control the cresting wheel from that used to grind the threads initially, the work being rotated 180° preliminary to engaging the cresting wheel with the threads.

3,561,172
METAL FINISHING TOOL
Wilfred M. Werner, Arcadia, and Herman P. Hommerson San Gabriel, Calif., assignors to Advance Honing Products, Inc., El Monte, Calif., a corporation of California
Filed Mar. 10, 1969, Ser. No. 805,478
Int. Cl. B24b *9/02*
U.S. Cl. 51—331 **12 Claims**

A metal finishing tool for honing or the like is disclosed and comprises a hollow mandrel having angularly spaced slots extending through the mandrel walls tangentially of the inner periphery thereof. Honing tool elements are slideable in the slots and have cylindrical portions thereon engaged in radial slots formed in an actuator shaft which is rotatably supported in the mandrel. An actuator sleeve on the mandrel is slideably keyed to the shaft and has a pin therein extending through helical grooves formed in the mandrel whereby endwise movement of the sleeve will rotate the actuator shaft to expand the honing tool elements outwardly in unison. Other types of metal finishing tool elements may be substituted for the honing elements.

3,561,173
QUICK CHANGE ABRASIVE FLAP WHEEL WITH SELF-CONTAINED COUPLING MEANS
Aleck Block, West Los Angeles, Calif., assignor, by mesne assignments, to Merit Abrasive Products, Inc., a corporation of California
Filed June 20, 1968, Ser. No. 738,630
Int. Cl. B24b *9/02*
U.S. Cl. 51—334 **4 Claims**



A wheel for grinding, polishing or buffing which is adapted for rapid installation on or removal from a power rotatable spindle or arbor without the use of tools, comprising a hub formed of axially spaced apart plates of thin but stiff metal or other suitable material, the plates cooperating with the inner end sections of abrasive leaves or polishing or buffing leaves to mount them in a radial circular pattern, and at least one of the plates being employed to mount a male threaded element adapted to be screwed on or off a complementary threaded end section of the spindle or arbor.

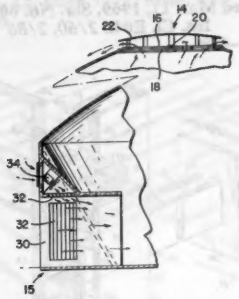
ERRATUM

For Class 51—358 see:
Patent No. 3,561,938

3,561,174
AIR-SUPPORTED STRUCTURE
Jon G. Schneidler, 125 108th SE., Bellevue, Wash. 98004
Filed Feb. 19, 1968, Ser. No. 706,285
Int. Cl. E04g *11/04;* **F24f** *7/06, 9/00*
U.S. Cl. 52—2 **9 Claims**

The roof of an air-supported structure is provided with a lift-counteracting exhaust crown to counteract the tendency of high velocity winds across the roof to "fly" the

roof off its base anchor. An air structure is also provided with a dynamic air door which can remain open continuously for ingress and egress without loss of air pressure

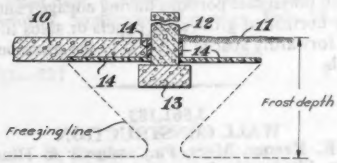


within the structure. The air supported structure can be a circular dome-shaped configuration or it can be of rectangular vaulted configuration.

3,561,175
FROST PROOF SHALLOW FOOTINGS OR PIERS AND METHOD THEREFOR

John S. Best, Midland, Mich., Gale L. Emig, Lafayette, Ind., and Frank H. Justin, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich., a corporation of Delaware

Filed Mar. 17, 1969, Ser. No. 807,592
Int. Cl. E02d *27/00, 31/00*
U.S. Cl. 52—169 **8 Claims**



A footing or pier for a building foundation which is higher above the normal frost line than conventional building practices permit and a method for installing such a footing. Through utilization of the latent heat in the ground, the ground around the footings is prevented from freezing and heaving by providing insulation of the necessary thickness and at the necessary location and depth with respect to the footing.

3,561,176
BAY WINDOW STRUCTURE

Charles K. Sitterly, Dubuque, Iowa, assignor to Caradco Incorporated, a corporation of Iowa

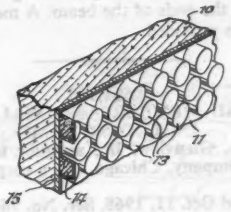
Filed Oct. 22, 1968, Ser. No. 769,601
Int. Cl. E04b *1/38*
U.S. Cl. 52—201 **5 Claims**

A bay window structure that may be either a bow bay, an angle bay or any other common bay structure comprising a plurality of window frames, each of which may be but is not necessarily a standard casement window unit, arranged side-by-side with adjacent edges on the inner side of the assembly of frames, at least one bendable connecting strip such as of metal, plastic or the like attached to these frame edges and bridging the space therebetween with each strip being bent to the bay contour of the structure, a first cover strip attached to the frames to conceal the bridging connecting strip and a second cover strip interconnecting the frames on the outer side of the bay structure to give a continuous window appearance.

3,561,177
BUILDING COMPONENT

Ignatius T. Agro, Buffalo, and Louis L. Chiusolo, Amherst, N.Y., assignors of one-third to Charles A. Cassaro, Buffalo, N.Y.

Filed July 16, 1968, Ser. No. 745,302
Int. Cl. B32b *3/12;* **E02d** *19/18*
U.S. Cl. 52—173 **14 Claims**

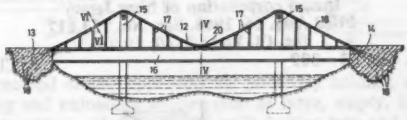


A laminated building panel for maintaining a water barrier compound in position against a structure which is to be waterproofed including a member providing a plurality of adjacent compartments extending in a plurality of directions, a water barrier compound in each of the compartments, a flexible backing layer covering the rear of said compartments and being water impervious and abrasion resistant, and a flexible facing layer for placement in contiguous relationship with a structure to be waterproofed, the facing layer being porous to permit penetration of water into the compartments for activating the water barrier compound.

3,561,178
BRIDGE SUPPORTING STRUCTURE HAVING REINFORCED CONCRETE ELEMENTS FORMED ALONG A CATENARY LINE

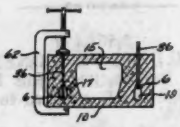
Ulrich Finsterwalder, Munich-Obermenzing, and Klemens Finsterwalder, Socking, near Starnberg, Germany, assignors to Dyckerhoff & Widmann Kommanditgesellschaft, Munich, Germany

Filed Oct. 29, 1968, Ser. No. 771,505
Claims priority, application Germany, Nov. 2, 1967, P 16 58 588.9
Int. Cl. E04c *1/04, 3/10*
U.S. Cl. 52—223 **8 Claims**



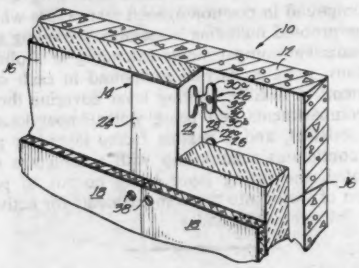
A multi-section bridge supporting structure having reinforced steel concrete elements extending along a catenary line and which are disposed between a pair of abutments or intermediate columns and whose reinforcing materials are anchored therein, where the steel concrete supporting elements constitute the supporting construction for a torsion resisting box girder anchored in the abutments which is of substantially constant structural height and which carries the runway.

3,561,179
SEGMENTED CONCRETE BEAM
James M. Young, 3402 W. Wells St., Milwaukee, Wis. 53208
Original application June 3, 1965, Ser. No. 460,904, now Patent No. 3,407,554, dated Oct. 29, 1968. Divided and this application Apr. 29, 1968, Ser. No. 724,980
Int. Cl. E04b 5/08; E04c 3/10, 3/26
U.S. Cl. 52—229 8 Claims



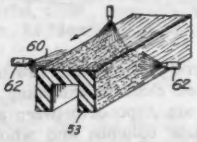
A prestressed, segmented concrete beam, has the tensile members so positioned and stressed as to effectively utilize the prestressing forces while preventing vertical shearing or splitting at the ends of the beam. A method of making such a beam is provided.

3,561,180
STRUCTURAL MEMBER AND WALL ASSEMBLY INCLUDING SAME
John K. Wise, Glenview, Ill., assignor to United States Gypsum Company, Chicago, Ill., a corporation of Delaware
Filed Oct. 11, 1968, Ser. No. 766,920
Int. Cl. E04b 5/52; E04c 3/08
U.S. Cl. 52—361 4 Claims



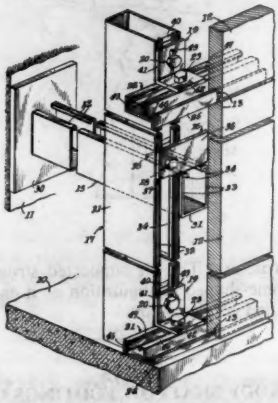
An elongated unitary L-shaped metal member has one flange provided with a series of strike-outs forming tabs which are integral with the flange along the distal edge portion of the flange and which are bendable to a position normal to such flange for securing the member to a wall. The resulting member serves as a furring member for retaining insulating panels and for supporting wallboard finishing panels on a masonry exterior wall.

3,561,181
REPLICA WOODEN BEAMS
Stephen H. Bassett, New York, N.Y., assignor to Paeco, Inc., a corporation of New Jersey
Filed Aug. 16, 1968, Ser. No. 753,117
Int. Cl. E04c 2/10, 19/02
U.S. Cl. 52—309 5 Claims



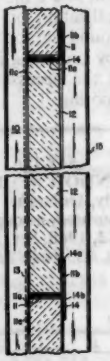
Molded plastic articles, such as replica wooden beams and panels and methods and apparatus of manufacture thereof. The article comprises a foamed urethane stained to provide coloration corresponding to a wooden element.

3,561,182
PANEL SUPPORT SYSTEM FOR BUILDING STRUCTURES
Joseph Madl, Jr., 990 Volante Drive, Arcadia, Calif. 91006
Filed Mar. 11, 1969, Ser. No. 806,122
Int. Cl. E04b 2/60, 2/88
U.S. Cl. 52—479 6 Claims



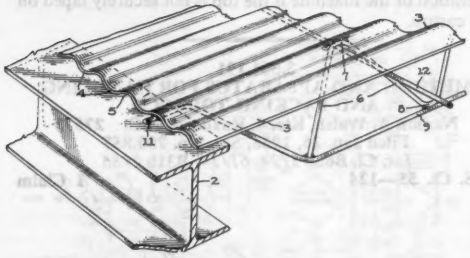
A rectangular grid comprising preferably uniformly spaced vertical columns, spacing brackets to support and connect said columns in adjustable spaced relation to a wall of a building structure, a set of vertically spaced, vertically adjustable mounting clips carried by each of said columns, a plurality of horizontal rails carried by horizontally aligned mounting clips, said rails being provided with horizontal portions having engagement in longitudinally horizontal grooves in panels or slabs to hold the latter in forwardly spaced relation to the mentioned structure wall.

3,561,183
WALL CONSTRUCTION
Charles K. Keener, Mars, Pa., assignor to Hinchliffe & Keener, Pittsburgh, Pa., a Pennsylvania partnership
Filed Feb. 20, 1969, Ser. No. 800,864
Int. Cl. E04b 2/02, 2/72
U.S. Cl. 52—488 6 Claims



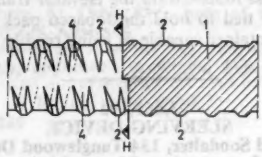
A wall construction and method of erection thereof which utilizes spaced parallel Z-bars affixed transversely of parallel buckstays and includes positioning insulation panels in single or double layers between the Z-bars where they are retained by special clip means attached to one of the Z-bars and insulation panels. Facing may be applied across the wall construction for additional rigidity weather protection or architectural purposes.

3,561,184
CORRUGATED DECK JOIST
Van Rensselaer P. Saxe, 1701 St. Paul St., Baltimore, Md. 21202
Filed Feb. 3, 1969, Ser. No. 795,903
Int. Cl. E04b *5/23*; E04c *3/20*
U.S. Cl. 52—630 4 Claims



A deck joist assembly includes a corrugated panel serving as a top chord and a bar joist member having a sinuous web the peaks of which are welded to the undersurface of the panel. Resistance to lateral load deflection is provided by a plurality of transverse rods welded to the panel either to the top or bottom surface thereof at points adjacent the welded web peaks.

3,561,185
ARMORING AND STRESSING ROD FOR CONCRETE
Ulrich Finsterwalder and Georg Kern, Munich, and Ernst Bock, Peine, Germany, assignors to Dyckerhoff & Widmann Kommanditgesellschaft, Munich, Germany, a firm
Filed Sept. 6, 1968, Ser. No. 757,851
Claims priority, application Germany, Feb. 12, 1968, D 55,306
Int. Cl. E04c *3/30, 5/03*
U.S. Cl. 52—737 7 Claims

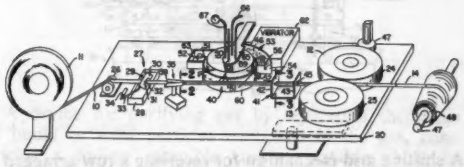


Armoring the stressing rod for reinforced and prestressed concrete which has an interrupted helical thread configuration with thread segments extending on opposite sides of the rod surface to full height only over one-third of the rod circumference and with their ends merging with the surface of the rod.

3,561,186
METHOD OF EVACUATING HOLLOW BODIES
Donald E. Pickering, 830 NW. St. Helens Ave., Portland, Oreg. 97229
Filed Apr. 17, 1968, Ser. No. 721,999
Int. Cl. B65b *31/00*
U.S. Cl. 53—22 3 Claims

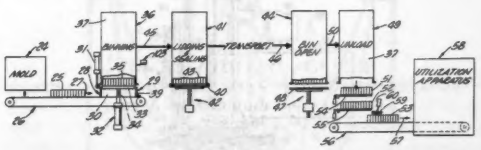
A method of creating a vacuum within a sealed, hollow body such as flexible plastic tubing which includes (1) purging the tubing of air by blowing a stream of helium through the open ends of the tubing, then (2) sealing the opposite ends of the tubing to entrap helium therein and then (3) storing the helium-filled, sealed tubing in an atmosphere of air so as to permit the helium to pass outwardly through the walls of the tubing without being replaced by air, thereby creating a vacuum condition within the interior of the tubing which remains until the seal is broken and which causes the sealed tubing to collapse.

3,561,187
METHOD AND APPARATUS FOR MAKING SEED TAPE
Frederick W. Rohnert, Hollister, James William Chaney, Gilroy, Haruto Okita, Hollister, and Burnie M. Craig, Pasadena, Calif., assignors to Waldo Rohnert Co., Hollister, Calif., a corporation of California
Continuation-in-part of application Ser. No. 605,251, Dec. 28, 1966. This application Mar. 20, 1968, Ser. No. 721,542
Int. Cl. B65b *9/06*
U.S. Cl. 53—28 14 Claims



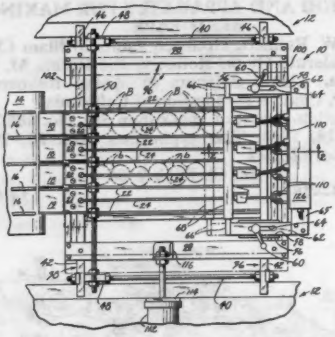
Water-soluble tape is moistened to make it tacky, is troughed, and is moved past a seed-dispensing station where at spaced intervals one seed at a time (or one group of seeds at a time) is deposited in the tape. The tape is then closed to encapsulate the seed and wound around a core. The seeds are dispensed by a rotary device with nozzles that pass over a seed tray, pick up one seed at each nozzle by vacuum, and drop the seed upon release of the vacuum.

3,561,188
METHOD OF LOADING ARTICLES INTO AND UNLOADING THEM FROM CELLULAR CONTAINERS
Keith B. Cleland, Azusa, Calif., assignor, by direct and mesne assignments, to Hunter Industries, Inc., Santa Fe Springs, Calif.
Application Dec. 27, 1966, Ser. No. 604,849, which is a continuation of application Ser. No. 824,717, Apr. 2, 1969. Divided and this application Mar. 20, 1969, Ser. No. 823,229
Int. Cl. B65b *21/10*
U.S. Cl. 53—26 6 Claims



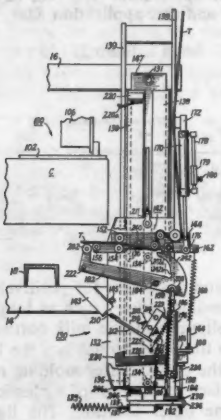
A method of and apparatus for positively holding, and loading and unloading articles such as large, empty, light weight, square, slippery plastic milk bottles into and out of a magazine so that they do not jam the handling apparatus. Typically the bottles, after molding may sometimes be made at the place of business of a plastic manufacturer and used at some other location. The light weight, resilience, and slippery surface of empty plastic milk bottles make them extremely difficult to handle. This difficulty is overcome through the use of the present invention in that movement of each bottle is positively guided and handled throughout the entire handling apparatus.

3,561,189
SHIFTING GRID
John L. Raudat, North Madison, Conn., assignor to Emhart Corporation, Bloomfield, Conn., a corporation of Connecticut
Filed Feb. 7, 1969, Ser. No. 797,463
Int. Cl. B65b *35/30, 57/10*
U.S. Cl. 53—61 **8 Claims**



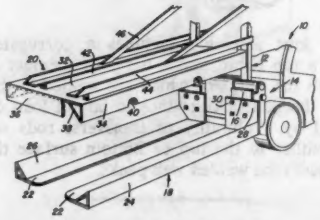
A shifting grid mechanism for receiving a row arranged charge of bottles from a bottle packing machine and directing and controlling the gravity fall of the charge into a container and having an adjustable barrier or stop for adapting the grid to accommodate charges of various size. Charge detecting means for controlling the operation of the grid and a portion of a chute for directing the gravity fall of the charge are associated with the barrier and adjustable therewith.

3,561,190
CARTON TAPING MACHINE
Jerome W. Derenthal, Succasunna, N.J., assignor to Stapling Machines Co., Rockaway, N.J., a corporation of Delaware
Filed Sept. 15, 1969, Ser. No. 857,742
Int. Cl. B65b *51/06, 57/08*
U.S. Cl. 53—67 **7 Claims**



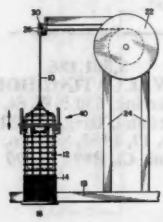
Machine for applying strips of adhesive tape around opposed lower corners of a carton to secure the top thereon, having a conveyor for moving the cartons to and from a taping station, a presser plate to engage the carton in said station and press the top firmly into place, tape applying heads movable across the opposed lower corners of the carton, to press the leading end of a strand of tape against the bottom of the carton and around the corner to the adjacent side and cut the tape, and top-lifter members to engage the top and press it upwardly and stop the operation of the machine if the top is not securely taped on the carton.

3,561,191
METHOD AND APPARATUS FOR HANDLING AND PACKING TOBACCO
Namon A. Walsh, Rte. 4, Roxboro, N.C. 27573
Filed Jan. 26, 1968, Ser. No. 700,857
Int. Cl. B65b *1/24, 61/14;* **B31b** *1/86*
U.S. Cl. 53—124 **1 Claim**



A labor saving method of handling a tobacco crop by compressing a pile of tobacco leaves between a bottom tray and top cover forming a paperboard container, utilizing an industrial truck equipped with a power operated, load elevating mechanism. Laterally and vertically movable pick up arms support and elevate the bottom tray on the elevating mechanism to compress the tobacco pile by bringing the top cover into engagement with a stationary press mounted on the elevator frame. The tray and cover are tied to hold the tobacco pack and form a convenient container capable of being readily handled and transported.

3,561,192
SLEEVING DEVICE
Arnold Scodalter, 134 Tanglewood Drive, Longmeadow, Mass. 01106
Filed Jan. 16, 1969, Ser. No. 791,596
Int. Cl. A22c *11/02, 13/00*
U.S. Cl. 53—197 **1 Claim**



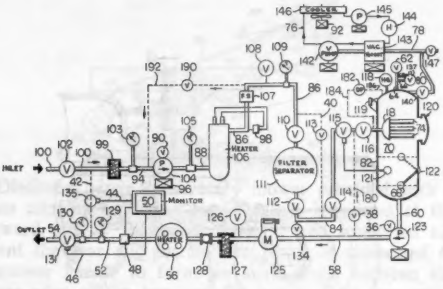
Apparatus for sleeving butcher's netting onto a cylindrical magazine comprising, a sleeving device having an opening therein, gripper wheels surrounding the opening and extending thereinto and adapted for functional engagement with the netting on the magazine, and unidirectional clutch means for permitting rotation of the wheels in one direction only.

3,561,193

PROCESS FOR THE PURIFICATION OF OILS AND THE LIKE

Leslie B. Baranowski, Wayne, Pa., assignor to Keene Corporation, New York, N.Y., a corporation of Delaware

Filed Jan. 8, 1969, Ser. No. 789,898
Int. Cl. B68c *1/20*
U.S. Cl. 55—46 8 Claims



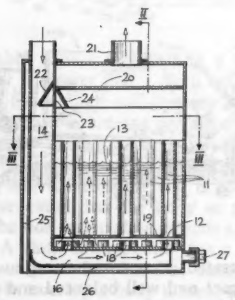
A process for the purification of electrical insulating liquids such as transformer oils, lubricating oils, and hydraulic oils containing water, air, and gases having the steps of transferring the oil to heater for raising the temperature of the oil approximately 40° F. above the inlet temperature, then passing the oil through a filter-separator for removing the free water and solid contaminant, then passing the oil through a vacuum degasifier for removing the remaining impurities such as gases, air, and water vapor, metering the purified oil and returning the oil to the place of intended use.

3,561,194

EXHAUST GAS CONDITIONER

Franklin Ernest Baldwin, 36 Cecil Ave., and Maurice Walter Baldwin, 61 Cecil Ave., both of Castle Hill, New South Wales, Australia

Filed Feb. 16, 1968, Ser. No. 705,986
Claims priority, application Australia, Feb. 17, 1967, 17,892/67
Int. Cl. B01d *47/02*
U.S. Cl. 55—249 1 Claim



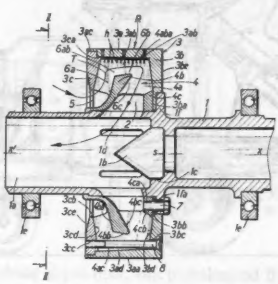
An exhaust gas conditioner for use with internal combustion engines, particularly diesel engines in confined and hazardous places such as coal mines. The conditioner which also acts as a flame trap has a gas inlet with anti-suck back means and the inlet gas passes into a water filled chamber where it is cooled and scrubbed by contact with the water and separated therefrom, some of the water being used to quench the incoming gas as it passes into a distributor and mixing tube associated with the chamber.

3,561,195

GAS PURIFYING DEVICE

Louis Léonard Bouru, Corbeil-Essonne, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France, a company of France

Filed Nov. 4, 1969, Ser. No. 873,990
Claims priority, application France, Nov. 6, 1968, 172,808
Int. Cl. B01d *45/14*
U.S. Cl. 55—409 14 Claims



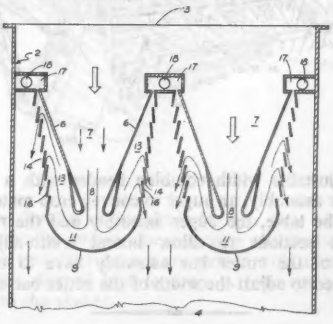
A device for purifying gas by separation therefrom of liquid or solid particles contained in the gas, comprising a hollow rotatable casing rotatable about its axis with means for the entry of impure gas at one end wall, passages for the exit of particles at its periphery and means for the exit of purified gas adjacent its axis, vanes, subdividing the casing into longitudinal ducts and baffle means in each duct causing the gas in each duct to flow through a centrifugal entry section, an axial convergent intermediate section and a centripetal divergent exit section, thereby to promote efficient purification with minimum pressure drop through the device.

3,561,196

DUST COLLECTOR APPARATUS

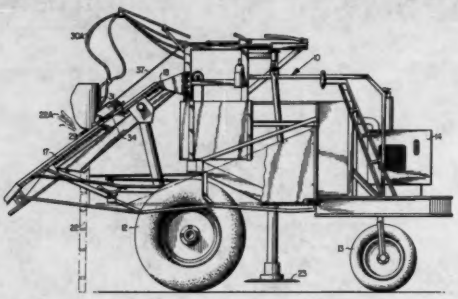
Karl L. Westlin, Louisville, Ky., assignor to American Air Filter Company, Inc., Jefferson, Ky., a corporation of Kentucky

Filed Mar. 25, 1969, Ser. No. 810,171
Int. Cl. B01d *45/06*
U.S. Cl. 55—423 3 Claims



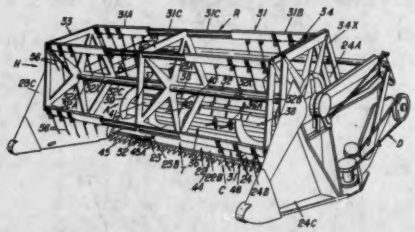
Dust collector apparatus of the louvered type wherein a dirty gas stream is originally passed through a converging dirty gas inlet plenum in a flow-through casing, reversed in its directional course in unitary fashion by deflector means to flow into a louvered dirty gas treating plenum and reversed again to its original course as a plurality of separate gas streams through louver passages in the walls of the dirty gas treating plenum.

3,561,197
SUGARCANE TOPPER
Harold A. Willett, Thibodaux, La., assignor to Cane Machinery & Engineering Company, Inc., Thibodaux, La., a corporation of Louisiana
Filed Apr. 14, 1969, Ser. No. 815,588
Int. Cl. A01d *45/02*
U.S. Cl. 56—17 **5 Claims**



The apparatus of this disclosure is directed to topping of standing sugarcane prior to its being severed from the earth and provides a rotary hydraulic motor driving a cutter which assembly slides up and down on wear plates mounted on the harvester pickups. The cutter assembly has a lateral stabilizer which is captive with but slidable along the outer rails of each of the front end pickups.

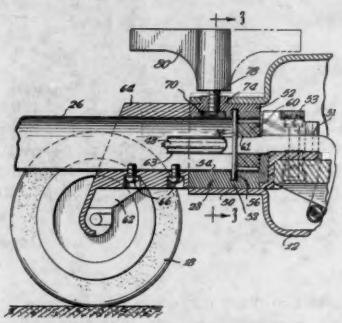
3,561,198
ADJUSTABLE HARVESTER TABLE
Franz J. Herbsthofer, Kassel-Harleshausen, Germany, assignor to Massey-Ferguson G.m.b.H., Kassel-Standeplatz, Germany, a corporation of Germany
Filed Aug. 21, 1968, Ser. No. 756,732
Claim priority, application Great Britain, Aug. 31, 1967, 39,795/67; Nov. 10, 1967, 51,170/67; May 4, 1968, 21,249/68
Int. Cl. A01d *41/02*
U.S. Cl. 56—20 **23 Claims**



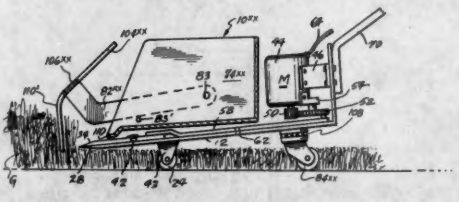
An adjustable width combine header with a table, a cutter bar assembly, an auger to convey crop material and a reel. The table, the auger assembly and the reel have telescopic sections to allow lateral width-adjustment. Sections of the cutter bar assembly have to be added or removed to adjust the width of the cutter bar assembly.

3,561,199
SYSTEM FOR CONVERTING EDGER-TRIMMER DEVICE
Michael T. Lay, West Chicago, Ill., assignor to G. W. Murphy Industries, Inc., a corporation of Texas
Filed July 17, 1969, Ser. No. 842,598
Int. Cl. A01d *35/26*
U.S. Cl. 56—25.4 **11 Claims**

An edger-trimmer device which has a cutting blade mounted on a casing, a handle secured to a carriage and in which the casing is pivotal relative to the handle and carriage combination. The interconnection between casing and carriage includes a tubular extension from the carriage pivotally received in a cylindrical receiver in the casing and restrained by a pin and groove arrangement from axial movement relative thereto. The casing can be pivoted 90° relative to the carriage to dispose the blade horizontally for trimming or vertically for edging. A locking device is provided for locking the casing in both positions as well as any intermediate position. The locking device includes a brake shoe engaging the tubular extension of the carriage and a handle with a threaded shank received in a threaded bore in the casing and having its inner end engaging the shoe for pressing the shoe against the tubular extension to lock the casing against pivotal movement. When the handle is loosened the shoe is released and the casing can be pivoted.



3,561,200
POWER OPERATED GRASS TRIMMER
Saverio Minunno, 4205 New Utrecht Ave., Brooklyn, N.Y. 11219
Filed June 11, 1968, Ser. No. 736,155
Int. Cl. A01d *53/06*
U.S. Cl. 56—201 **4 Claims**



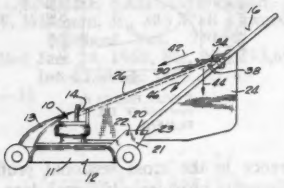
A power operated grass trimmer or lawn mower that is simple, compact and well balanced and capable of being operated with a minimum of fatigue. The trimmer is equipped with a rectangular shaped stationary comb plate with cutting teeth and with a movable cutter blade or plate reciprocable across the cutting teeth of the comb plate to provide a double cutting action during its back and forth movements. A removable box with a U-shaped handle is provided for receiving and disposing of the cut grass. The mower can be tilted upon one of its roller supports by depressing or lifting the handle to vary the height of cut of the grass. One of the supporting rollers can be driven by the motor that operates the cutter blade.

3,561,201

GRASS BAG CARRIER FOR LAWNMOWER

Einar S. Dahl, Galesburg, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill., a corporation of Delaware

Filed Nov. 4, 1968, Ser. No. 773,109
Int. Cl. A01d *35/22, 53/06*
U.S. Cl. 56—202 8 Claims



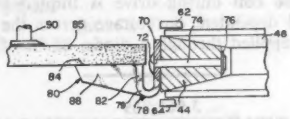
Disclosed herein is a rotary mower provided with a grass clipping collection bag which is supported at the forward end by the mower housing and supported adjacent the rear end by an arm which is connected to a mower handle to form an acute angle between the upper edge of the bag and the handle. The supporting arm has a hook which is selectively engageable with a series of loops on a reinforced upper edge of the bag to maintain the edge taut to create a force component on the connection between the bag and handle along the upper edge of the bag. When the grass collection bag fills with clippings, the forward force component creates a resultant force on the handle because of connection between the mower handle and the bag, which force extends in a direction toward or forwardly of the pivotal connection of the handle to balance the downward forces on the handle.

3,561,202

SIDE SHARPENABLE CUTTERS

Myron D. Tupper, Portland, Oreg., assignor to Omark Industries, Inc., Portland, Oreg., a corporation of Oregon

Continuation of application Ser. No. 664,054, Aug. 29, 1967. This application Feb. 6, 1970, Ser. No. 7,409
Int. Cl. A01d *55/24*
U.S. Cl. 56—291 15 Claims



Side sharpenable cutters mounted in a cutting chain and on a belt for a mower and a cloth cutting machine, and sharpenable by annular, self-dressing abrasive members pushed against a forward end surface of a side cutter plate of each cutter as the cutter is advanced past the abrasive member. One form of cutter has the side cutter plate twisted so that the forward end is offset from the body and another cutter has the body so tilted relative to the belt that the side cutter plate extends angularly relative to the belt. A cloth cutting cutter has a cupped plate with the cutting edge at the rim. One cutter is mounted on a belt by rivets securing a body thereof to the belt.

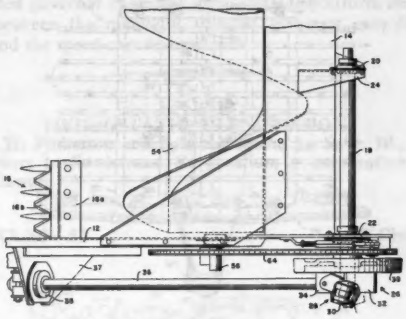
3,561,203

UNBALANCED WOBBLE DRIVE FLYWHEEL

Joseph C. Hurlburt, Leola, Pa., assignor to Sperry Rand Corporation, New Holland, Pa., a corporation of Delaware

Filed June 26, 1968, Ser. No. 740,315
Int. Cl. A01d *55/02*
U.S. Cl. 56—296 2 Claims

An unbalanced wobble drive for a harvesting machine sickle comprised of a drive shaft rotatably supported on a machine header frame structure, a wobble drive unit connecting the drive shaft to a reciprocating sickle and an unbalanced flywheel mounted on the drive shaft rearwardly of the wobble drive unit, the unbalanced flywheel being adapted to counteract and dampen the vibrations transmitted to the machine header by the reciprocating sickle and the drive train.

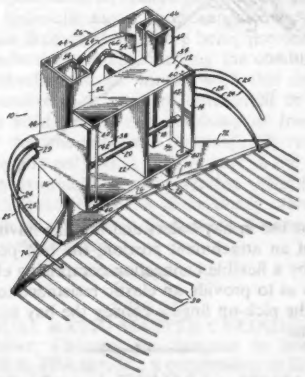


3,561,204

FRUIT PICKER

William S. Carson, Highland Park, Lake Wales, Fla., assignor of forty percent to Ashland Company of New Jersey, Inc., Newfoundland, N.J.

Filed June 20, 1967, Ser. No. 647,524
Int. Cl. A01g *19/00*
U.S. Cl. 56—328 8 Claims



A shaker for harvesting fruit from a tree which includes, generally, prongs for engaging the fruit-bearing foilage of a tree. The prongs are moved with a snap-motion to cause ripened fruit to drop. A fruit catcher may be affixed to the shaker.

3,561,205

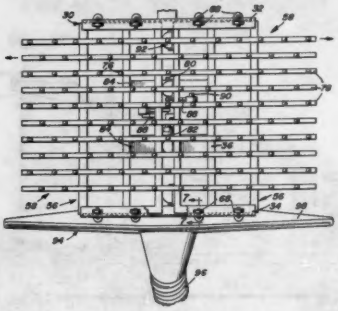
FRUIT HARVESTER

Alfred R. Baker, Wabasso, Fla.
(1408½ Edmiston Court, Auburndale, Fla. 33823)

Filed June 6, 1968, Ser. No. 735,116
Int. Cl. A01g *19/04, 19/08*
U.S. Cl. 56—328 11 Claims

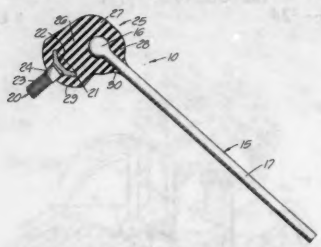
A horizontally and vertically adjustable boom mounted picking head formed of a series of projecting rodlike

fingers which are progressively penetrated to increasing depths within a fruit tree and laterally reciprocated at the different depths of penetration in a manner so as to snap



the fruit stems and allow for a fall of the fruit through the pattern formed by the rods and into a fruit gathering apparatus.

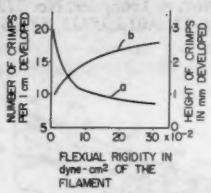
3,561,206
HARVESTER TINE
Lawrence E. Fuller, Whittier, and Stanley R. White, Paramount, Calif., assignors to Byron Jackson Inc., Long Beach, Calif., a corporation of Delaware
Filed Aug. 28, 1968, Ser. No. 756,041
Int. Cl. A01d *77/00*
U.S. Cl. 56—400 **12 Claims**



A tine for use in hay balers and the like having a finger portion and an attachment portion, the two portions being joined by a flexible connection comprising elastomeric material so as to provide an elastic resistance to drag and shocks as the pick-up fingers convey the hay into the baling machine.

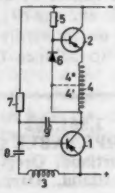
3,561,207
SYNTHETIC TEXTURED YARN
Yoshio Izuka, Noriyasu Mashimo, Masao Watanabe, Hiroshi Asami, Akishige Kitazawa, Hideyuki Tanaka, Akio Takegawa, Junnosuke Nagashima, Hideo Takai, and Shinro Inai, Otsu-shi Shiga-ken, Japan, assignors to Toray Industries, Inc., Tokyo, Japan, a Japanese company
Filed Aug. 16, 1968, Ser. No. 753,175
Claims priority, application Japan, Aug. 17, 1967, 42/52,418; Aug. 30, 1967, 42/55,158; Sept. 6, 1967, 42/56,749, 42/56,750; Oct. 9, 1967, 42/64,681; Oct. 12, 1967, 42/65,146; Oct. 18, 1967, 42/66,544; Sept. 4, 1967, 42/75,232; Feb. 2, 1968, 43/60,241
Int. Cl. D02g *3/04*
U.S. Cl. 57—140 **6 Claims**

An improved synthetic textured yarn composed of more than two kinds of thermoplastic synthetic filaments having different flexural rigidities, torsional rigidities, fineness and mixing ratios. Particular definitions in the relations among those factors assures remarkably enhanced bulkiness and crimp rigidity of the yarn composed of the fila-



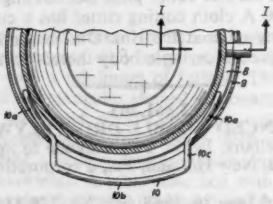
ments. Difference in the cross sectional profiles of the component filaments provides additional deep colour effects to the textile fabric made of the textured yarn.

3,561,208
AMPLITUDE STABILIZER FOR TIMEPIECE
Siegbert Hils, Peterzell, Germany, assignor to Kienzle Uhrenfabriken G.m.b.H., Schwenningen am Neckar, Germany, a limited-liability company of Germany
Filed Aug. 19, 1968, Ser. No. 753,458
Claims priority, application Germany, Aug. 22, 1967, P 16 73 765.8
Int. Cl. G04c *3/00*
U.S. Cl. 58—23 **3 Claims**



A constant amplitude magnetically driven mechanical timepiece oscillator having a drive coil connected to a DC source through the emitter-collector line of a transistor. Current in the coil during drive is limited by having base potential dependent on voltage across the coil, potential being applied through a diode.

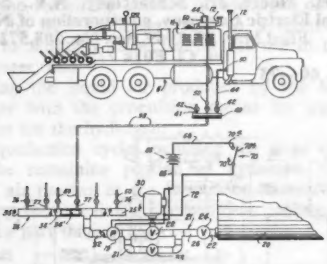
3,561,209
WRISTWATCH WRISTLET MOUNTING MEANS
Gérard Cachelin, Le Locle, Switzerland, assignor to Fabrique d'Horlogerie Ch. Tissot & Fils S.A., Le Locle, Switzerland, a Swiss company
Filed Sept. 30, 1968, Ser. No. 763,813
Claims priority, application Switzerland, Oct. 4, 1967, 13,854/67; Mar. 28, 1968, 4,630/68
Int. Cl. G04b *37/00*
U.S. Cl. 58—88 **4 Claims**



A wristwatch case having a side wall on which is engaged a removable outer ring, the adjacent faces of these members each having a groove in which fit the ends

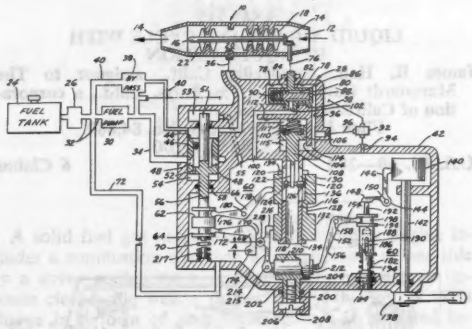
of two spring elements serving to axially maintain the outer ring on the side wall, the middle part of these elements forming lugs or loops for fixing the wristlet.

3,561,210
METHOD AND APPARATUS FOR COOLING ENGINE EXHAUST PIPES
Ben W. Wiseman, Jr., 303 Wall Towers-West, Midland, Tex. 79701
Filed Jan. 24, 1969, Ser. No. 793,695
Int. Cl. A62c *3/00, 35/40*
U.S. Cl. 60—31 **17 Claims**



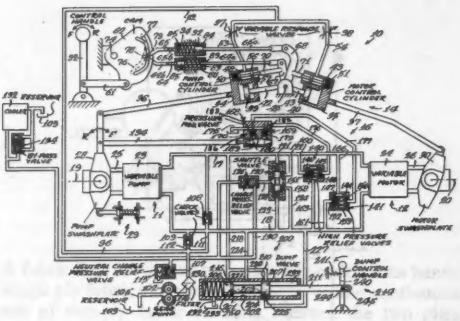
A method and apparatus for cooling exhaust pipes of internal combustion engines wherein carbon dioxide, stored in liquid state, is dispensed through a network of conduits and released in or around each exhaust pipe to cool the pipe preventing fire when combustible fluid comes into contact therewith.

3,561,211
CONTROL WITH CONSTANT DROOP GOVERNOR
Warren H. Cowles, Birmingham, Mich., assignor to Holley Carburetor Company, Warren, Mich., a corporation of Michigan
Continuation-in-part of application Ser. No. 561,266, June 28, 1966. This application Sept. 6, 1968, Ser. No. 757,824
Int. Cl. F02c *9/08*
U.S. Cl. 60—39.28 **4 Claims**



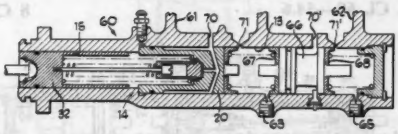
A gas turbine engine fuel control having a governor system providing a constant governor droop at all engine speeds, the governor including an engine speed sensing mechanism, an acceleration cam and a speed cam, mechanism for positioning the acceleration and speed cams in response to speed changes indicated by the speed sensing mechanism, lever means operatively connected between the acceleration cam and the main fuel valve of the fuel control for regulating the fuel valve during acceleration of the engine, lever means operatively connected between the speed cam and the fuel valve for regulating the fuel valve during the governing of the engine, a manually adjusted governor cam, and an adjustable platform member between the manually adjusted governor cam linkage and the speed cam lever means.

3,561,212
HYDROSTATIC TRANSMISSION
John W. Pinkerton and Lyle S. Martin, La Salle, Ill., assignors to Sundstrand Corporation, a corporation of Delaware
Filed Jan. 27, 1969, Ser. No. 794,078
Int. Cl. F16d *31/02*
U.S. Cl. 60—53 **8 Claims**



A hydrostatic transmission for a vehicle including a variable displacement hydraulic pump and a variable displacement hydraulic motor interconnected in closed circuit by main fluid conduits, there being provided a dump valve for selectively interconnecting the conduits to permit free wheeling of the motor, with this dump valve being responsive to a pressure differential in the main conduits to hold the valve in its dump or free wheeling position so that the valve will automatically return to its inactive position only when the pressure in the main conduits is approximately equal preventing vehicular jerking which would occur otherwise if the dump valve could be manually deactivated when there was a pressure differential between the conduits.

3,561,213
DUAL RATIO MASTER CYLINDER
Samuel Shiber, Chicago, Ill., assignor to Borg-Warner Corporation, Chicago, Ill., a corporation of Delaware
Filed June 27, 1969, Ser. No. 837,081
Int. Cl. F15b *7/08*
U.S. Cl. 60—54.5 **12 Claims**



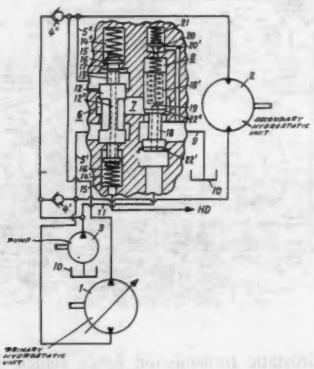
A dual ratio master cylinder adapted to be connected to a hydraulic braking system, the master cylinder including a pair of pistons of different diameter operable within a bore and means dsiposed between the pistons adapted to exert a force to resist a compressive force up to a

predetermined value such that upon activation of the master cylinder, all "play" in the system is removed in a low pressure high volume operation until a predetermined pressure is built up within the system at which time a secondary hydraulic booster acts to build up additional pressure in a higher pressure lower volume phase of operation.

3,561,214
FLUSHING APPARATUS FOR REVERSIBLE HYDROSTATIC DRIVES

Gerhard Bobst, Oensingen, Switzerland, assignor to Von Roll AG, Gerlafingen, Switzerland, a corporation of Switzerland

Filed Apr. 26, 1968, Ser. No. 724,498
Claims priority, application Switzerland, May 2, 1967, 6,263/67
Int. Cl. F16d *31/00*
U.S. Cl. 60—53 **4 Claims**

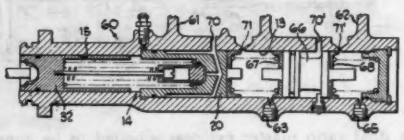


A flushing device for reversible hydrostatic drives of the type embodying a flushing pump and a respective feed valve means for each pressure side of the drive. There is further provided a flushing valve means which is controlled by the momentary prevailing high pressure. A pressure limiting valve means which is connected after the flushing valve means incorporates a piston member which is impacted via a direct connection by the flushing pump means. This piston member is provided with two control edge portions, one of which is effective when the slide member of the flushing valve means is in its null or neutral position and the other of which is effective when such slide member has assumed an operating position.

3,561,215
DUAL RATIO MASTER CYLINDER

Frederick A. Krusemark, Maywood, Ill., assignor to Borg-Warner Corporation, Chicago, Ill., a corporation of Delaware

Filed June 27, 1969, Ser. No. 837,080
Int. Cl. F15b *7/08*
U.S. Cl. 60—54.6 **8 Claims**

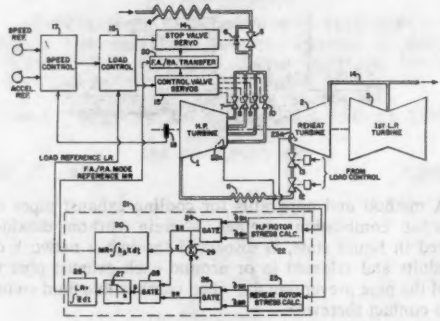


A dual ratio master cylinder adapted to be connected to a hydraulic braking system, the master cylinder including a pair of pistons of different diameter laterally displaced from one another and means disposed between the pistons adapted to exert a force to resist a compressive force up to a predetermined value such that upon activation of the master cylinder, all "play" in the system is removed in a low pressure high volume operation until a predetermined pressure is built up within the system at which time a secondary hydraulic booster acts to build up additional pressure in a higher pressure lower volume phase of operation.

3,561,216
THERMAL STRESS CONTROLLED LOADING OF STEAM TURBINE-GENERATORS

James H. Moore, Jr., Schenectady, N.Y., assignor to General Electric Company, a corporation of New York

Filed Mar. 19, 1969, Ser. No. 808,572
Int. Cl. F01k *7/24*
U.S. Cl. 60—73 **7 Claims**

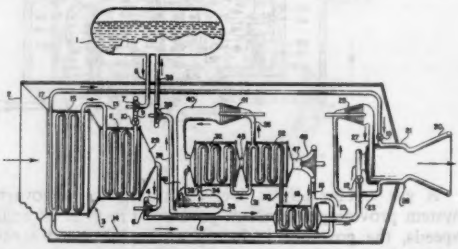


In a steam turbine-generator with means for setting load in accordance with a load reference signal and with additional means for transferring between full arc and partial arc mode of steam admission, the rotor stresses are continuously calculated and set the rate of loading the steam turbine. The type of steam nozzle admission between full arc and partial arc is additionally controlled in accordance with a mode reference signal so as to minimize the thermal stress differences between high pressure and reheat rotors in order to reduce the turbine loading time.

3,561,217
LIQUID AIR ENGINE CYCLE WITH RELIQUEFACTION

James R. Hall, Sepulveda, Calif., assignor to The Marquardt Corporation, Van Nuys, Calif., a corporation of California

Filed Jan. 25, 1961, Ser. No. 84,889
Int. Cl. B63h *11/00*
U.S. Cl. 60—204 **6 Claims**



1. A method of operating a liquid air engine to obtain low specific fuel consumption comprising the steps of:
storing low temperature liquid hydrogen as fuel;

passing said hydrogen under pressure through a heat exchanger in heat exchange relationship with incoming air to liquefy all the air while vaporizing the hydrogen;

controlling the hydrogen-to-air ratio in the heat exchanger at a high enough value to always maintain the hydrogen at a lower temperature than the air passing through its point of incipient liquefaction;

passing a portion of the hydrogen discharged from the heat exchanger to a propulsion means for combustion therein;

controlling the magnitude of said portion to maintain the hydrogen-to-air ratio in the propulsion means of about stoichiometric;

passing the remaining portion of hydrogen discharged from the heat exchanger through a reliquefaction cycle to reliquefy same for further use in the heat exchanger; and

connecting the liquid air produced by the heat exchanger with the propulsion means for use as an oxidant for the hydrogen;

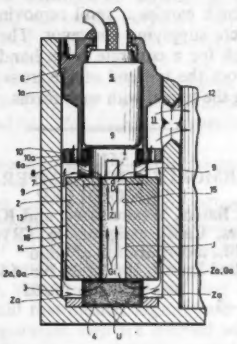
the reliquefaction cycle including the steps of cooling the remaining portion of hydrogen with the liquid air passing to the propulsion means, and expanding the remaining portion after cooling to reliquefy a part thereof.

3,561,218

GAS GENERATOR TUBULAR CHARGE CONSTRUCTION AND METHOD OF OPERATION

Kurt Paeckel and Heinz G. Langer, Ottobrunn, Germany, assignors to Messerschmitt-Bolkow Gesellschaft mit beschrankter Haftung, Ottobrunn, near Munich, Germany

Filed Mar. 6, 1969, Ser. No. 804,782
Claims priority, application Germany, Mar. 21, 1968, P 17 51 016.6
Int. Cl. F02k *9/04*
U.S. Cl. 60—204 **17 Claims**



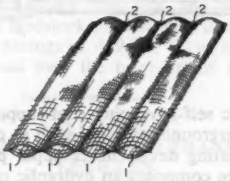
A solid fuel gas generator such as a rocket engine includes a combustion chamber which is closed at one side by a cover containing a detonating cap and has an opposite closed side with a primer charge thereby. A main charge in a form of an annular burner is mounted between the detonator cap and the primer charge, and a throttle ring is interposed between one end of the charge and the detonator cap and it defines passages for the outflow of generated gases produced by the igniting gases and the burning of the interior of the main charge. The throttle ring permits gas to pass through a screen defined by one end of the cover which covers the detonating cap. The throttling action ensures that all of the gases which are generated in, or delivered to, the hollow interior of the main charge do not pass directly outwardly through the combustion chamber discharge but a portion proceeds along and around the opposite end of the main charge to inflame the exterior wall of the main charge and to maintain it ignited.

3,561,219

TEXTILE MAT FOR INDUSTRIAL USE IN THE FIELD OF CIVIL ENGINEERING

Masazumi Nishizawa and Kaizo Kotera, Otsu-shi, and Michitsura Ohta, Takatsuki-shi, Japan, assignors to Toray Industries, Inc., Tokyo, Japan, a company of Japan

Filed Apr. 10, 1968, Ser. No. 720,234
Claims priority, application Japan, Oct. 13, 1967, 42/86,482; Dec. 18, 1967, 42/105,514
Int. Cl. E02b *3/12*
U.S. Cl. 61—38 **9 Claims**



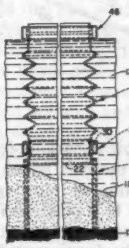
A fabric mat for soil stabilization has continuous bands of single ply fabric alternating with intervening continuous bands of two-ply fabric forming between the two plies continuous hollow tubelike containers which are filled with sand, gravel or the like. One end of the tubelike containers is closed before filling and the other after filling. The mats may have selvages along opposite side edges which are secured to selvages of like mats to connect a plurality of mats together.

3,561,220

METHOD AND APPARATUS FOR CONTAINING WELL POLLUTANTS

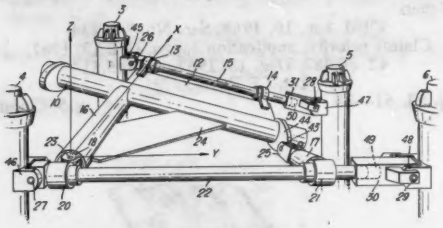
Chester George Riester, 10397 South Lake Blvd., Parma, Ohio 44130

Filed Mar. 26, 1969, Ser. No. 810,733
Int. Cl. E02b *1/00*
U.S. Cl. 61—34 **11 Claims**



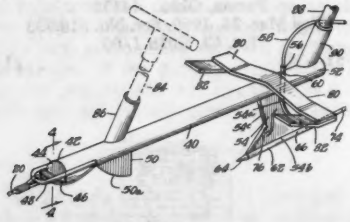
A well installation apparatus and method, particularly for offshore wells, utilizing a large coffer or caisson surrounding the well point, such coffer or caisson including a submerged caisson having secured to the top thereof an annular axially expansible substantially water impermeable extension secured at its lower end to the top of the submerged caisson and at its top to a floating ring.

3,561,221
ROOF-SUPPORTING ASSEMBLIES
Hans Büll, Wuppertal-Elberfeld, and Alfred Maykemper, Wuppertal-Barmen, Germany, assignors to Herman Hemscheidt Maschinenfabrik, Wuppertal-Elberfeld, Germany, a German body corporate
Filed Oct. 14, 1969, Ser. No. 866,277
Claims priority, application Germany, Oct. 23, 1968, P 18 04 611.2
Int. Cl. E21d *15/44*
U.S. Cl. 61—45 **4 Claims**



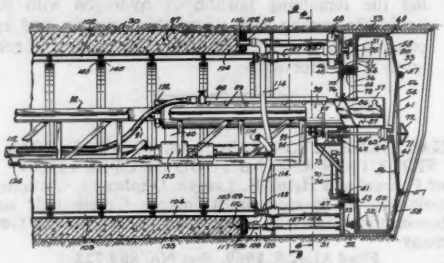
An hydraulic self-advancing roof-supporting assembly for use in underground workings such as coal mines having a compensating device in its upper part. This compensating device comprises an hydraulic ram arranged to act longitudinally of the assembly and two transversely-arranged hydraulic aligning cylinders, the compensating device as a whole being so mounted on the assembly that it is pivotable in three different planes.

3,561,222
APPARATUS FOR LAYING UNDERGROUND CABLE, WIRE, PIPE, OR THE LIKE
James C. Sweeton, 618 Myrtlewood Lane, Wheaton, Ill. 60187, and Frank G. Cain, 3662 Ingleside, Dallas, Tex. 75229
Filed Jan. 30, 1969, Ser. No. 795,319
Int. Cl. F16l *1/00;* **E02f** *5/00*
U.S. Cl. 61—72.6 **6 Claims**



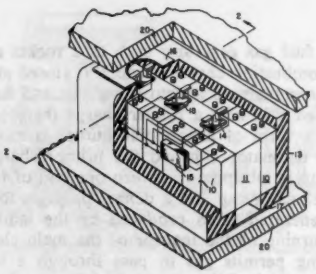
Easily hand portable apparatus for laying underground cable, wire, pipe, or the like, which includes a hand controllable ground slitting or plowing unit adapted to be connected by a cable to a power driven winch and pulled along the ground thereby, said unit comprising an elongated body portion having power driven cable engaging means positioned at the forward end thereof and a plow blade positioned at the rear or trailing end thereof. A stationary ground penetrating pre-cutting blade or knife is secured to the body portion of the plowing unit rearwardly of the forward end thereof. Means is secured to the plow blade for laying, or pulling, cable, wire, pipe, or the like, into the narrow slit formed by the blade. Means also is provided on the plow blade for intercepting and deflecting loosened soil whereby the blade is maintained at maximum depth in the soil, and the loosened soil is substantially prevented from exerting forces on other elements secured to the blade which would tend to lift the blade out of its normal path of travel through the soil. Laterally extending stabilizing arms, capable of supporting the full weight of an operator, are secured to the body portion adjacent the rear or trailing end thereof. A pair of removable handles are positioned on the upper surface of the body portion to provide leverage or support for an operator. The apparatus advantageously includes a portable winch which can be anchored at any preselected location and connected to the ground slitting or plowing unit by means of a retractable cable, or the like.

3,561,223
TUNNELING MACHINE WITH CONCRETE WALL FORMING MECHANISM
John R. Tabor, 3400 Spruce St., Racine, Wis. 53403
Filed July 9, 1968, Ser. No. 743,363
Int. Cl. E01g *3/04*
U.S. Cl. 61—85 **11 Claims**



This disclosure relates to a tunneling machine which has a shield with a rotary excavating wheel to excavate a tunnel, and mechanism for forming a tubular concrete tunnel lining or wall against the tunnel sides. The machine has an elongated truss which trails behind the shield and which carries a spoil removing conveyor and a fluid concrete supplying conveyor. The truss also constitutes a track for a concrete form handler for transferring forms from the tail end of the truss to the head end and for lining the tunnel with such forms.

3,561,224
THERMOELECTRIC TEMPERATURE CONTROLLER
Hampden O. Banks, Westminster, and Kenneth K. Tang, Los Angeles, Calif., assignors to TRW Inc., Redondo Beach, Calif., a corporation of Ohio
Filed June 7, 1967, Ser. No. 644,327
Int. Cl. F25b *21/02*
U.S. Cl. 62—3 **7 Claims**



A device such as a battery has its temperature maintained within a selective range by providing a source of

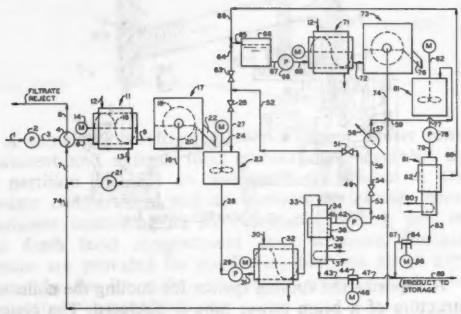
continuous heat, and a thermoelectric means is thermally connected between the continuous heat source and a heat sink. The thermoelectric means augments the heat source by adding heat to the battery when the ambient temperature is low and cools, or draws heat away from, the continuous heat source and the battery when the ambient temperature is high.

3,561,225

APPARATUS AND PROCESS FOR 4-STEP SEPARATION OF A CRYSTALLIZABLE COMPONENT OF A MIXED FEEDSTOCK

Robert A. Hinton, Bartlesville, Okla., assignor to Phillips Petroleum Company, a corporation of Delaware

Filed Aug. 26, 1968, Ser. No. 755,088
Int. Cl. B01j *9/04*
U.S. Cl. 62—58 **10 Claims**



This invention is a 4-step separation process. A feedstock is partially frozen, (1) the resulting crystals are separated from the remaining liquid, the crystals are purified by countercurrent contact with some of the melt obtained by melting the purified crystals, (2) the remaining melt is separated as product, the mother liquor from the purification is partially frozen, (3) the resulting crystals are separated from the remaining liquid, the crystals are purified as in (1), and (4) the remaining melt is separated as product. This saves refrigeration over the prior art.

A more complete abstract is given in the next two paragraphs.

A first feedstock containing a mixture of components is cooled in a first cooling step to at least partially crystallize at least one of said components from solution to form a first slurry of crystals in a first noncrystallized mother liquor. In a first separation step said first crystals are separated from said first mother liquor. Said first crystals from said first separation step are slurried with a second mother liquor to form a second slurry, cooled in a second cooling step and passed into a first crystal purification zone into contact with a first heating element at the end of said zone. Some of the resulting first melt from the end of said zone is taken off in a second separation step as the separated first component product, while some of said first melt is passed in countercurrent contact with said first crystals wherein it is refrozen and returned to the melt zone. The refreezing action displaces occluded mother liquid from the crystals, which is removed in a filter zone upstream of said melt zone as said second mother liquor. Some of said second mother liquor is mixed with a third mother liquor and cooled in a third cooling step to form a third slurry of second crystals of said first component in a fourth mother liquor. In a third separation step said second crystals are separated from said fourth mother liquor. Said second crystals from said third separation step are slurried with some of said second mother liquor to form a fourth slurry and passed into a second crystal purification zone into contact with a second heating element at the end of said second zone. The resulting second melt from the end of said second zone is taken off in a fourth separation step as more of the separated first component product, while some of said second melt is passed back in countercurrent contact with said second crystals so as to purify said second crystals of occluded mother liquor which is removed from said second zone ahead of said second heating element as said third mother liquor and passed with some of said second mother liquor to said third cooling zone as described above. Said first and fourth mother liquors are heat exchanged with said first feedstock prior to said first cooling step in order to save refrigeration.

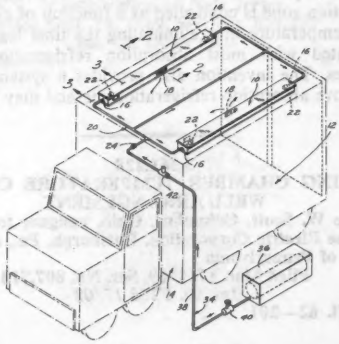
By not recycling the first and fourth mother liquors from the first and third separation steps, and by not recycling the second and third mother liquors to the feedstock prior to said first cooling and first separation step, and by heat exchanging said first and fourth mother liquors with said feedstock prior to said first cooling step, in Example 1 a savings of 429,000 B.t.u./hour in refrigeration is achieved over the prior art of Example 2.

3,561,226

REFRIGERATING SYSTEM FOR TRANSPORTABLE VEHICLES

Julius Rubin, 54 Madison Ave., Franklin Square, N.Y. 11010

Filed Oct. 7, 1968, Ser. No. 765,502
Int. Cl. F25c *1/00*
U.S. Cl. 62—66 **8 Claims**



A method and apparatus for refrigerating a chamber in trucks, rail cars and the like adapted for transporting products requiring refrigeration, in which the source of refrigeration is a container mounted in said chamber which container is filled by a block of solid refrigerant formed by flowing into said container a pressurized liquid refrigerant under a controlled pressure and velocity to produce solid refrigerant flakes which are caused to move through the length of the container and pack the refrigerant flakes densely therein to form said block of solid refrigerant.

3,561,227

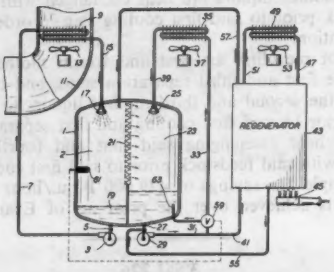
ABSORPTION REFRIGERATION SYSTEM, METHOD AND APPARATUS FOR EXTERNAL CIRCULATION OF ABSORBENT

Judson S. Swearingen, Los Angeles, Calif., assignor to Judson S. Swearingen, trustee of Swearingen Trust D

Filed Aug. 5, 1968, Ser. No. 750,054
Int. Cl. F25b *15/06*
U.S. Cl. 62—103 **8 Claims**

An absorption refrigeration method comprising passing a refrigerant through an evaporation zone having a pressure therein low enough to produce evaporation of at

least a portion of the refrigerant and consequent cooling of the unvaporized portion thereof, heat exchanging the unvaporized refrigerant with a medium sought to be cooled, thereby warming the refrigerant, and returning the so warmed refrigerant to the evaporation zone, withdrawing at least a portion of the vaporized refrigerant through a mist eliminator into a closed absorption zone in communication with said evaporation zone, spraying a liquid absorbent into the absorption zone to absorb the vaporized refrigerant, circulating the partially spent liquid absorbent externally of the absorption zone in indirect heat exchange



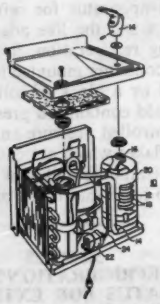
relation with a cooling medium to extract the heat of condensation and absorption and spraying the cooled partially spent absorbent back into the vaporous refrigerant in the absorption zone to absorb additional refrigerant, the rate of partially spent absorbent sprayed back into the absorption zone is controlled as a function of evaporation zone temperature thus eliminating the time lag generally associated with most absorption refrigeration control schemes. The invention also provides a system whereby the above absorption refrigeration method may be carried out.

3,561,228

COOLING CHAMBER TEMPERATURE CONTROL WELL ARRANGEMENT

Eugene W. Scott, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa., a corporation of Pennsylvania

Filed Mar. 17, 1969, Ser. No. 807,713
Int. Cl. F25d *17/02*
U.S. Cl. 62—201 **8 Claims**



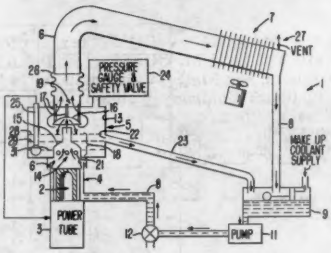
In a drinking water cooling chamber of the type having a series of refrigerant cooling coils wrapped about the cooling chamber, a temperature control well arrangement for receiving a capillary temperature sensing element in which the well takes the form of a tube extending for substantially the height of the chamber and has its lower portion bonded to at least one of the cooling coils near the lower position of the chamber, and an upper portion of the well being bonded directly to the cooling chamber. A substantial portion of the well tube between the bonding locations is spaced out of contact from the coils along which the tube extends.

3,561,229

COMPOSITE IN-LINE WEIR AND SEPARATOR FOR VAPORIZATION COOLED POWER TUBES

Martin E. Levin, Burlingame, Calif., assignor to Varian Associates, Palo Alto, Calif., a corporation of California

Filed June 16, 1969, Ser. No. 833,654
Int. Cl. F25b *4/04*
U.S. Cl. 62—218 **8 Claims**



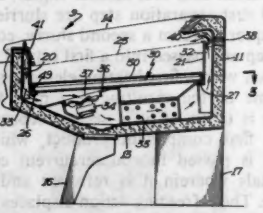
A vaporization cooling system for cooling the collector structure of a beam power tube is disclosed. The system includes a composite weir and vapor separator connected in-line between a beam collector boiler and a vapor condenser. The composite weir and separator includes a chamber with a reentrant conduit for directing emulsified coolant from the boiler against a deflector for separating the vapor from the liquid coolant. The vapor is directed to the condenser and the liquid is stored in a weir portion of the chamber and fed by gravity back to the boiler to maintain a safe liquid level in the boiler.

3,561,230

FLOOR PAN ARRANGEMENT FOR REFRIGERATED DISPLAY CASE

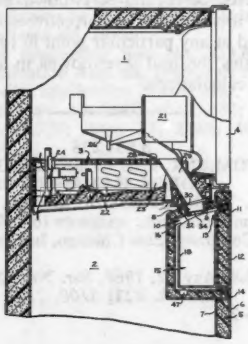
Robert P. Gatton, Kendallville, and Robert G. Reffner, Garrett, Ind., assignors to Streater Industries, Inc., Albert Lea, Minn., a company of Minnesota

Filed Mar. 17, 1969, Ser. No. 807,572
Int. Cl. A47f *3/04*
U.S. Cl. 62—256 **3 Claims**



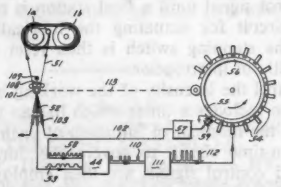
The invention relates to a floor pan arrangement for an air curtain type refrigerated display case. The floor pan arrangement provides (1) easy access for cleaning the space which houses the refrigeration apparatus and for repairing the apparatus, and (2) a drainage system for disposing of liquids created by undesired thawing of food products.

3,561,231
COMBINATION REFRIGERATOR WITH ICE SERVICE IN FRESH COMPARTMENT DOOR
William M. Webb, Louisville, Ky., assignor to General Electric Company, a corporation of New York
Filed Apr. 3, 1969, Ser. No. 813,222
Int. Cl. F25d *17/08, 23/02*
U.S. Cl. 62—344 11 Claims



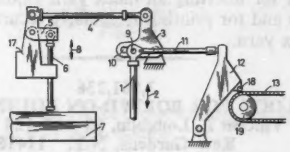
A combination refrigerator comprising a freezer compartment and a fresh food compartment separated by a partition includes an automatic ice maker in the freezer compartment and an insulated ice storage compartment containing an ice receptacle forming part of the fresh food compartment door structure. Passage means are provided for conducting both ice pieces produced by the ice maker and below freezing air to the ice storage compartment.

3,561,232
NEEDLE SELECTION SYNCHRONIZING APPARATUS FOR A CIRCULAR KNITTING MACHINE
Hans Joachim Stock, Freiburg im Breisgau, and Richard Schmidt, Stuttgart-Vaihingen, Germany, assignors to Franz Morat GmbH, Stuttgart-Vaihingen, Germany
Division of application Ser. No. 520,938, Jan. 17, 1966. Continuation-in-part of applications Ser. No. 543,455, Mar. 22, 1966, now Patent No. 3,327,499; Ser. No. 543,457, Mar. 22, 1966, now Patent No. 3,324,685; and Ser. No. 562,938, June 29, 1966, now Patent No. 3,313,128, which is a continuation-in-part of application Ser. No. 404,118, Oct. 15, 1964. This application Mar. 17, 1967, Ser. No. 624,681
Claims priority, application Germany, Mar. 6, 1965, M 64,421
The portion of the term of the patent subsequent to Apr. 11, 1984, has been disclaimed
Int. Cl. D04b *15/78*
U.S. Cl. 66—50 9 Claims



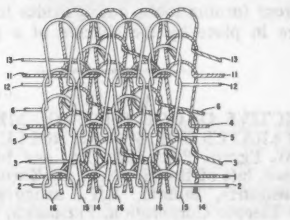
Timing impulses produced by the rotating needle cylinder of a circular knitting machine and program representing selecting impulses are superimposed and form during coincidence timed needle selecting impulses controlling electromagnetic actuating means of the cylinder needles so that selected needles are operated in accordance with the program in exact synchronism with the angular displacement of the rotating needle cylinder.

3,561,233
FALL PLATE MECHANISM
Karl Kohl, Offenbacher Landstrasse 20, Hainstadt am Main, Germany
Filed July 15, 1969, Ser. No. 841,853
Claims priority, application Germany, July 25, 1968, P 17 60 964.2
Int. Cl. D04b *27/00*
U.S. Cl. 66—86 6 Claims



The fall plate of a Raschel knitting machine is moved toward and away from the needles by a hinged linkage driven by the main camshaft of the machine. One of the pivot pins in the linkage is radially slidable in an elongated slot arranged in such a manner that the stroke of the fall plate can be reduced and the fall plate held inoperative by shifting the pivot pin in the slot in synchronization with the cam action. A connecting rod actuated by the patterning mechanism shifts the pivot pin.

3,561,234
FINE GAUGE DOUBLE KNIT FABRIC
Lester Mishcon, Miami Beach, and Donald W. Reagan, Hialeah, Fla., assignors to The Singer Company, New York, N.Y., a corporation of New Jersey
Filed Sept. 19, 1969, Ser. No. 859,253
Int. Cl. D04b *9/08*
U.S. Cl. 66—196 6 Claims



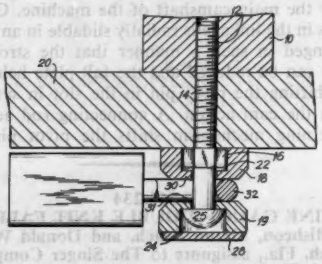
An improved fine gauge double knit fabric and its method of manufacture is disclosed, the fabric having long and short loops drawn to one side of the fabric and other long and short loops drawn to the other side of the fabric, the short loops on each side of the fabric being arranged in pairs in each of which the loops intermesh in wales of the fabric, the long loops and the pairs of short loops on each side of the fabric alternating in courses and wales, and intermeshing in the wales.

3,561,235
TEXTILE DYEING APPARATUS
Allan H. Crawford, Amsterdam, N.Y., assignor to Mohasco Industries, Inc., Amsterdam, N.Y., a corporation of New York
Filed Nov. 17, 1967, Ser. No. 684,055
Int. Cl. B05c *1/04, 1/06*
U.S. Cl. 68—204 3 Claims

The invention relates to apparatus for printing a pattern on a plurality of yarns. The apparatus includes a plurality of printing means together with a plurality of feed means, feed means alternating with printing means, the apparatus

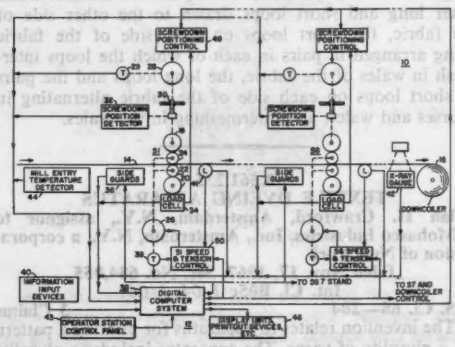
being constructed and arranged to carry the yarns in a substantially horizontal path through the printing means. Means are provided to print the yarns on opposed sides as the yarns pass through the printing means. Means are provided for inserting an index yarn among the plurality of yarns and for printing a regularly recurring pattern on the index yarn.

3,561,236
LOCK FOR BOLTED-ON EQUIPMENT
Vincent E. Loughlin, 83—17 124 Place, Kew Gardens, N.Y. 11415
Filed July 24, 1969, Ser. No. 844,435
Int. Cl. E05b *73/00*; F16b *41/00*
U.S. Cl. 70—232 **8 Claims**



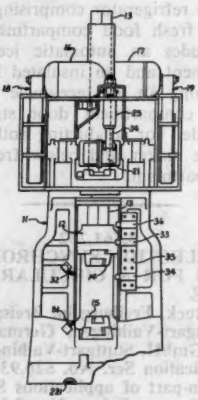
A mounting lock for typewriters and like equipment, to secure the equipment so effectively to a base structure on which it is mounted so that it cannot be readily removed by thieves and carried off. The device embodies a guard in which a removable fastening is enclosed and protected from turning tools, and provides for jamming the enclosure in place by the shackle of a padlock or the like.

3,561,237
PREDICTIVE GAUGE CONTROL METHOD AND APPARATUS FOR METAL ROLLING MILLS
Calvin W. Eggers, Penn Hills, Pa., and John C. Csonka, deceased, late of Buffalo, N.Y., by Kornelia E. Csonka, administratrix, Buffalo, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa., a corporation of Pennsylvania
Filed Nov. 29, 1967, Ser. No. 686,783
Int. Cl. B21b *37/14*
U.S. Cl. 72—7 **47 Claims**



A programmed computer control system provides on line predictive roll force gauge control for a tandem hot steel strip mill. A gauge control program calculates screwdown movement predictively required for optimum or near optimum gain correction of roll force error on the basis of on line detected roll force and screwdown position values and on the basis of predetermined mill spring constant and workpiece plasticity values. To compensate for steady state gauge error conditions, a screwdown offset movement value is determined and combined with the roll force error correcting screwdown movement value to define the total amount of corrective screwdown movement required at any particular point in time. The control system operates the mill screwdowns in accordance with the program calculations.

3,561,238
AUTOMATIC DIE LUBRICATOR FOR DROP HAMMERS
Lawrence R. Tetzloff, Calumet City, Ill., and Lowell L. Crom, Hammond, Ind., assignors to Indiana Forge and Machine Company, East Chicago, Ind., a corporation of Indiana
Filed May 22, 1968, Ser. No. 731,112
Int. Cl. B21j *3/00, 7/06*
U.S. Cl. 72—23 **18 Claims**



An automatic die lubricator for drop-type hammers wherein nozzles are positioned to spray lubrication over the die faces and a control system is provided to actuate these nozzles after the delivery of each series of a predetermined number of working blows. The control system includes proximity switches which are responsive to the movement of the reciprocating upper die for providing a control signal upon the delivery of each blow, and a stepping switch which is advanced one station by each control signal until a final station is reached whereupon a circuit for actuating the lubricating nozzles is closed. The stepping switch is then reset and the cycle repeats without interruption.

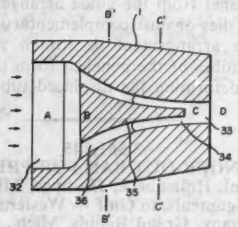
To control the intensity of the working blows, the control system includes a timer which has an off-time circuit to govern the moment of initiation of each control signal and an on-time circuit to govern the duration of each. The timed control signals are then employed to actuate the upper die lifting mechanism. The timer may have a single on-time circuit so that each control signal is of the same duration whereby each blow is delivered from the same height, or a different on-time circuit for each blow of a predetermined blow pattern whereby such blows may be delivered from varying heights. In this latter case, the different on-time circuits are each connected to a respective station of a stepping switch which is advanced one station in response to the initiation of each control signal

and which is recycled to the first station by the reset means in response to the initiation of the control signal following the delivery of the complete pattern.

3,561,239
APPARATUS FOR FORMING METALS BY MEANS OF JET LIQUID

Hiroshi Tominaga and Masanobu Takamatsu, Yokohama-shi, Japan, assignors to Tokyu Sharyo Seizo Kabushiki Kaisha, Yokohama-shi, Japan

Continuation of application Ser. No. 533,024, Mar. 9, 1966. This application Aug. 28, 1969, Ser. No. 856,880
Claims priority, application Japan, Mar. 18, 1965, 40/15,335; Apr. 23, 1965, 40/23,682; June 17, 1965, 40/35,756; Aug. 27, 1965, 40/51,960, 40/51,961
Int. Cl. B21d *26/04*
U.S. Cl. 72—60 **1 Claim**



A method of forming metal using a mold cavity member comprises placing the metal in association with the cavity member in a position such that it can be deformed into the cavity thereof and directing a liquid first through a narrowing passage to increase the velocity and impact force and thereafter directing the liquid at high impact force and velocity against the metal to shape it into the form of the mold cavity.

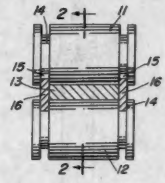
The apparatus for carrying out the invention includes a liquid pressure chamber and a plunger which is slidable in the chamber but which is exposed at the exterior of the chamber to permit it to be moved rapidly by striking it. The movement of the plunger causes the displacement of the liquid in the chamber through a narrowing passage to increase its velocity and impact force. The chamber for generating the high impact force of the liquid and increased velocity of the liquid is located adjacent a mold cavity member so that the liquid might be injected into the mold cavity member to deform the metal to be formed. Various embodiments for increasing the velocity of the liquid and its impact force are disclosed including a single narrowing passage and a double passage construction, as well as a divergent passage construction.

3,561,240
METHOD AND APPARATUS FOR TREATING MATERIALS

John A. Schey, Hinsdale, Ill., assignor to IIT Research Institute, Chicago, Ill., a not-for-profit corporation of Illinois

Continuation-in-part of application Ser. No. 587,358, Sept. 16, 1966, which is a continuation-in-part of application Ser. No. 444,637, Apr. 1, 1965. This application Dec. 7, 1967, Ser. No. 691,109
Int. Cl. B21b *1/22, 39/00*
U.S. Cl. 72—184 **9 Claims**

A method and apparatus is disclosed for forming materials into desired shapes by rolling or casting. The rolled shapes may be of constant or irregular cross section. The apparatus includes lateral restraint members that move

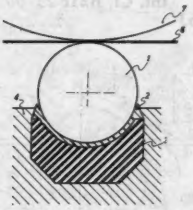


with the workpiece to prevent edge cracking in rolling or provide a moving wall die in casting.

3,561,241
ROLLING MILL FOR THIN STRIPS

Paul Blain, Saint-Germain-en-Laye, France, assignor to Institut de Recherches de la Siderurgie Francaise, Saint-Germain-en-Laye, France

Filed Mar. 11, 1969, Ser. No. 806,218
Claims priority, application France, Mar. 13, 1968, 143,520; Feb. 14, 1969, 6,903,583
Int. Cl. B21b *29/00*
U.S. Cl. 72—201 **8 Claims**



Bending of a working roll in a rolling mill for metal strips is prevented by backing the working roll itself or a backing up roll for the working roll by means of a rubber cushion confined in a recess of a rigid receptacle by a pressure transmitting trough member movable inwardly and outwardly of the recess and blocking the open side of the same. The trough member conformingly receives the centrol portion of the working roll or backing-up roll over all or most of the axial length of the latter, and the rubber cushion distributes the rolling pressure uniformly over the axial length of the engaged roll portion.

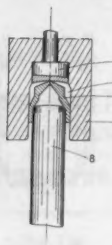
3,561,242
PROCESS FOR FORMING BOTTOMED TUBULAR MEMBERS FROM METAL BLANKS

Oreste Biginelli, Rue Buffon, Clermont Ferrand, Puy de Dome, France

Filed Nov. 20, 1967, Ser. No. 684,300
Claims priority, application France, May 12, 1967, 106,338
Int. Cl. B21c *23/00*
U.S. Cl. 72—256 **4 Claims**

Metal blanks are punched into a stepped preliminary form having a circular cross-section. During the punching operation, metal flows both radially and longitudinally. The preliminary form is then subjected to another punching operation effecting a further flow of metal in both a radial and longitudinal direction thereby pro-

ducing the final shape of the bottomed tubular members. During both punching operations, the longitudinal flow

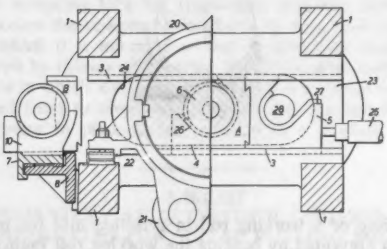


of metal is in a direction opposite to the movement of the punch.

3,561,243
EXTRUSION PRESS

Robert Kenneth Valks, Penfield, N.Y., and Keith Ross, Sheffield, England, assignors to Davy and United Engineering Company Limited, Sheffield, England, a British company

Filed May 3, 1968, Ser. No. 726,471
Claims priority, application Great Britain, May 4, 1967, 20,855/67
Int. Cl. B21c *23/00*
U.S. Cl. 72—263 **9 Claims**



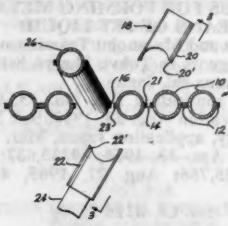
An extrusion press has its die supported in a holder which is releasably coupled to an anchor member to form an assembly. The assembly is displaceable relative to the platen in a direction normal to the longitudinal axis of the press and in order to remove the die and its holder, the assembly is slid across the face of the platen until the holder is in a position from which it can be displaced parallel to the axis of the press to release the die holder from the anchor member. Displacement of the die holder parallel to the axis of the press can cause a replacement die holder to be displaced into coupled relation with the anchor member.

3.561,244
APPARATUS FOR FORMING OPENINGS IN TUBULAR PANELS

Jack L. Woods and Kenneth B. Garner, Chattanooga, Tenn., assignors to Combustion Engineering, Inc., Windsor, Conn., a corporation of Delaware

Filed Aug. 12, 1968, Ser. No. 751,808
Int. Cl. B21d *43/28, 53/02;* **B21k** *21/00*
U.S. Cl. 72—324 **3 Claims**

An apparatus for forming openings in tubular welded wall panels particularly used for lining furnace walls of steam generators. An adjustable guide arrangement is oriented with respect to the tubes in the tube panel between which the opening is to be formed so as to guide the tubes upon movement thereof out of the plane of the panel. Hydraulic jacks located on the opposite

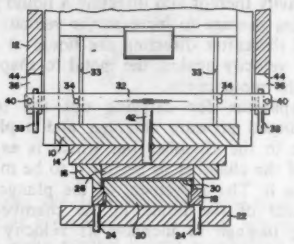


side of the panel from the guide arrangement alternately force shaped dies against complementary shaped portions of the guide arrangement to stretch and bend therebetween the tubes of the panel to form the desired opening without deforming the displaced tubes.

3,561,245
KNOCK-OUT BAR FOR PRESSES

William Frank Hollenbeck, Hastings, Mich., assignor, by mesne assignments, to Gulf + Western Industrial Products Company, Grand Rapids, Mich., a corporation of Delaware

Filed Sept. 6, 1968, Ser. No. 757,936
Int. Cl. B21d *45/00*
U.S. Cl. 72—345 **2 Claims**



A knock-out mechanism for a press comprising a knock-out bar extending through the slide with knock-out pins adjustably secured to the ends of the bar. The pins are adapted to engage a surface on the press frame. Pressure pins cooperate with the bar to eject the workpiece.

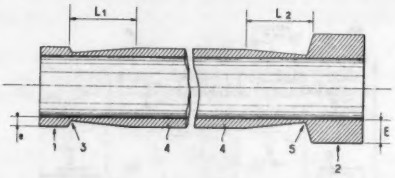
3,561,246
METHOD OF MANUFACTURING THIN-WALLED TUBES

Jacques Joseph Verdickt, Malo-les-Bains, France, assignor to Societe Anonyme dite: Vallourec Usines a tubes de Lorraine-Escaut et Vallourec Reunies, Paris, France

Filed May 16, 1968, Ser. No. 729,790
Claims priority, application France, May 18, 1967, 106,854
Int. Cl. B21b *23/00*
U.S. Cl. 72—365 **4 Claims**

A new method of making thin-walled tubes according to which a tubular blank is rolled in such a manner as to form a short section of relatively large diameter at each end, each followed, as the center of the tube is approached

first by a neck, and then by a segment of gradually increasing diameter. The end sections of large diameter are



then cut off and the remainder of the blank rolled to the desired thickness in a reducing mill.

3,561,247
METHOD FOR BENDING TUBING

Louis A. Pfafman, 318 Yale Ave., Stratford, N. Y. 08084; and Michael P. McNally, 128 E. Military Road, and Charles A. Freeberg, 315 Asbury Ave., both of National Park, N.J. 08063

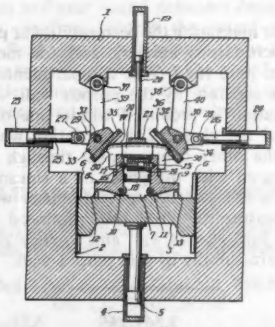
No Drawing. Filed Aug. 27, 1968, Ser. No. 755,725
Int. Cl. B21d *9/01*
U.S. Cl. 72—369 **1 Claim**

The subject invention relates to a unique method for bending rigid metallic tubing or other like tubular products. The process assures an effective internal support for the walls of the tubing during bending and generally comprises the steps of annealing, inserting a compressible mandrel, cold bending the tubing and removing the mandrel so that the tubing is ready for further fabrication and assembly steps.

3,561,248
APPARATUS FOR FORMING CURVED METAL BARS AS AUTOMOBILE BUMPERS

Michio Bessho, Himeji-shi, Japan, assignor to Kawasaki Yuko Kabushiki Kaisha, Takasago-shi, Japan

Filed May 21, 1968, Ser. No. 730,778
Int. Cl. B21d *7/04, 7/025, 7/028*
U.S. Cl. 72—383 **4 Claims**

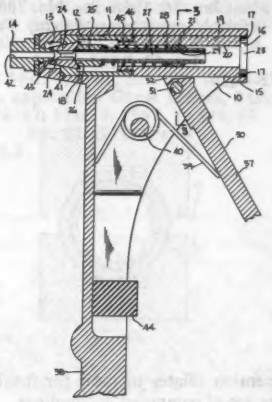


Forming apparatus employing a pair of rockable female die members and a split type male die assembly including a pair of side die members. The female die members serve to roll-bend the opposite end portions of the blank in cooperation with the side members of the male die as as latter is forced to rise. Subsequently, upon expansion of the male die assembly, the intermediate portion of the blank with its end portions clamped against the side male die members is efficiently stretch-formed along the contoured surface of the male die assembly through plastic deformation of the material.

3,561,249
BLIND RIVET TOOL WITH MODULATED FORCE LINKAGE

Richard B. Freeman, 3354 Dorchester Road, Shaker Heights, Ohio 44120

Filed Nov. 29, 1968, Ser. No. 779,935
Int. Cl. B21d *9/05;* **B23p** *19/00*
U.S. Cl. 72—391 **7 Claims**

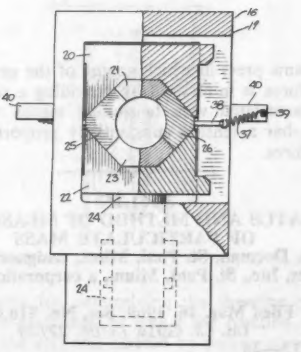


A manually operated tool for setting blind rivets and having a pivoted handle whose short lever arm end is bifurcated and engages a cylindrical cross spin which is transversely mounted in a collet body. The collet body is mounted for reciprocal movement in the housing to which the operating handle is secured and is provided with mandrel-engaging jaws for gripping and exerting a pulling force on the mandrel or stem of a blind rivet which is mounted in the nose piece of the tool.

3,561,250
APPARATUS FOR PRESSING METAL SHEATHS ON THE ENDS OF OIL-FILLED ELECTRIC CABLES

Agostino Oriani, Milan, Italy, assignor to Pirelli Societa per Azioni, Milan, Italy, a corporation of Italy

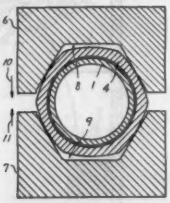
Filed Apr. 5, 1968, Ser. No. 719,104
Claims priority, application Italy, May 23, 1967, 16,391/67
Int. Cl. B21d *41/04*
U.S. Cl. 72—402 **5 Claims**



An apparatus for sealing the ends of oil-filled electric cable having a metallic sheath the prevent leakage during

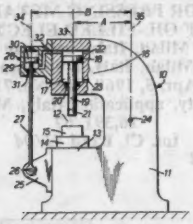
manufacturing process and including means for pressing the metallic sheath to a rigid closure member positioned at the cable end.

3,561,251
TOOLS FOR COUPLING PIPES WITH OTHER MEMBERS
Hisao Matsumoto, 406–1 Aza-Ishizuka, Misono, Amagasaki-shi, Hyogo-ken, Japan
Filed Jan. 26, 1968, Ser. No. 700,899
Claims priority, application Japan, Feb. 4, 1967, 42/7,368
Int. Cl. B21d *37/10*
U.S. Cl. 72—416 **8 Claims**



This invention relates to tools for firmly joining pipes through the use of compression couplings.

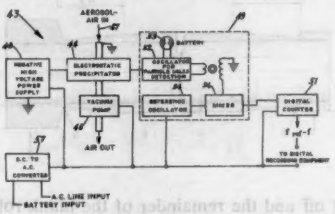
3,561,252
PRESSES
Hubert Veare Norton, Leslie Buckingham Norton, and Douglas Edwin Norton, Horley, Surrey, England, assignors to Norton Tool Company Limited, Horley, Surrey, England
Filed Feb. 5, 1969, Ser. No. 796,815
Claims priority, application Great Britain, Feb. 8, 1968, 6,269/68
Int. Cl. B21j *9/02*
U.S. Cl. 72—455 **9 Claims**



A C-frame press in which gaping of the gap due to the pressing force is minimised by providing a tie-bar across the gap associated with tensioning means which apply to the tie-bar a tension substantially proportional to the pressing force.

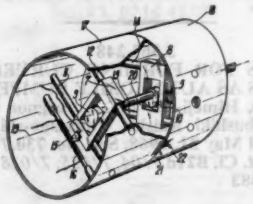
3,561,253
APPARATUS AND METHOD OF MEASUREMENT OF PARTICULATE MASS
Frank D. Dorman, St. Paul, Minn., assignor to Thermo-Systems, Inc., St. Paul, Minn., a corporation of Minnesota
Filed Mar. 26, 1969, Ser. No. 810,659
Int. Cl. G01n *15/06, 27/00*
U.S. Cl. 73—28 **33 Claims**

A particle measurement apparatus having an oscillator circuit with a quartz crystal carrying electrode films to detect particle mass force-collected on a surface of a film by reading the change in the resonant frequency of the quartz crystal. The oscillator circuit is combined with a device for force-collecting particles on the electrically-



driven film. The electrical signal of the oscillator circuit is monitored by a frequency-counting device.

3,561,254
APPARATUS FOR MEASURING THE PERMEABILITY OF POROUS WALLS
Henri Argaud, Serge Bienfait, and Charles Eyraud, Lyon, and Daniel Massignon, Paris, France, assignors to Commissariat a l'Energie Atomique, Paris, France
Filed Aug. 5, 1968, Ser. No. 750,197
Claims priority, application France, Aug. 10, 1967, 117,600
Int. Cl. G01n *15/08*
U.S. Cl. 73—38 **1 Claim**



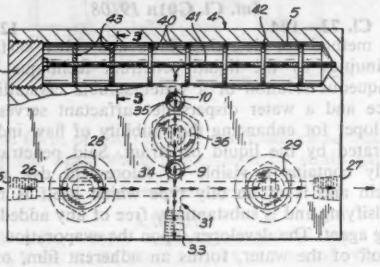
A device for measuring the permeability of porous walls, especially microporous barriers, and for measuring the distribution of pore radii. Two compartments of a sealed enclosure are separate by the porous wall. A sinusoidal pressure variation is produced within one of said compartments and the phase of the variation which is transmitted into the other compartment through said porous wall is compared with the phase of a sinusoidal current produced by a straight form potentiometer with a sliding contact to measure the phase shift produced by transmission through said porous wall and thereby give a indication of the permeability of said porous wall.

3,561,255
LEAK TESTING APPARATUS
Edward N. Kostielney, Jr., Taylor, Mich., assignor to Ajem Laboratories, Inc., Livonia, Mich.
Filed Feb. 14, 1969, Ser. No. 799,322
Int. Cl. G01m *3/26*
U.S. Cl. 73—40 **7 Claims**

A leak testing device, commonly employed in testing automotive engine components and the like, which pressurizes the part to be tested and a standard chamber, separates the two, and then measures the difference in pressure over a given period of time between the part and the standard chamber.

The improvement in such a device reducing the time required for taking a reproduceable useful reading by

incorporating baffles in the standard chamber which restrict the flow of testing fluid thereby reducing oscillation and hastening standard conditions, the baffles are preferably in the form of plates or discs spaced longitudinally



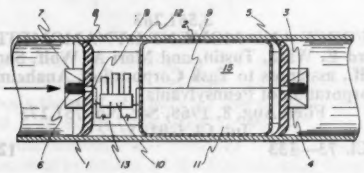
of the ballast chamber with each having a space between its outer periphery and the wall of the chamber, or formed with perforations therein, or a combination of both.

3,561,256

PIPELINE LEAK DETECTOR

William M. Bustin, Summit, N.J., and Harry C. Cook, Genoa, Italy, assignors to Esso Research and Engineering Company, a corporation of Delaware

Filed Mar. 28, 1969, Ser. No. 811,519
Int. Cl. G01m *3/24*
U.S. Cl. 73—40.5 **10 Claims**



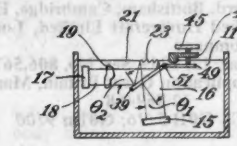
An apparatus for the detection of pipeline leaks, in which an apparatus comprising a sound absorbent canister between front and rear sound detectors designed to move through the pipeline, records the sound generated by the escaping fluid. The leak is located at the point wherein the recording traces, generated by the sound detectors, indicate a sudden change in sound intensity caused by the sound absorbent canister covering the leak.

3,561,257

ULTRASONIC BEAM COMBINER IN HOLOGRAPHY

Byron B. Brenden, Richland, Wash., assignor to Holotron Corporation, Wilmington, Del., a corporation of Delaware

Filed Mar. 6, 1968, Ser. No. 710,892
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.5 **14 Claims**



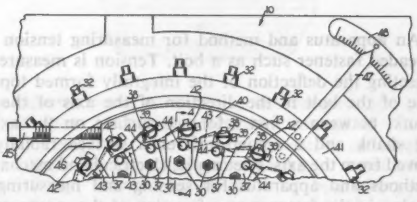
A method and apparatus for combining two or more beams of ultrasonic energy, including a beam combining plate in an embodiment where one beam is reflected and a second beam is transmitted. When utilized in ultrasonic holography, two ultrasonic beams are so combined to interfere at a suitable holographic detecting surface to allow more flexibility in the placement of an object under investigation.

3,561,258

APPARATUS FOR TESTING TUBES OR RODS BY ULTRASONICS

Roland Ashford, Pelsall, near Walsall, and Dennis Terry, Hayley Green, England, assignors to S.T.D. Services Limited, Edgbaston, Birmingham, England, a British company

Filed Mar. 1, 1968, Ser. No. 709,699
Claims priority, application Great Britain, Mar. 1, 1967, 9,694/67; Mar. 8, 1967, 10,899/67
Int. Cl. G01n *29/04*
U.S. Cl. 73—71.5 **8 Claims**



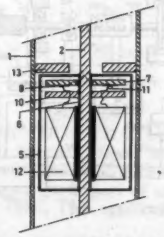
An ultrasonic tester for tubes has an array of angularly adjustable carriers arranged around a passage through which the test piece is passed. Each carrier has two transducers with their axes co-planar and inclined in opposite directions at equal angles to the carrier axes. One set of transducers is pulsed sequentially and the other set are connected in a synchronised sequence to a detector.

3,561,259

APPARATUS FOR DETERMINING THE SHEARING RESISTANCE OF THE SOIL

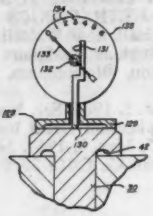
Diederik G. Barendse, Voorburg, Netherlands, assignor to Stichting Waterbouwkundig Laboratorium, Delft, Netherlands, a nonprofit institution of and under Dutch laws

Filed June 13, 1968, Ser. No. 736,853
Claims priority, application Netherlands, June 16, 1967, 6708390
Int. Cl. G01n *3/22, 33/24*
U.S. Cl. 73—84 **6 Claims**



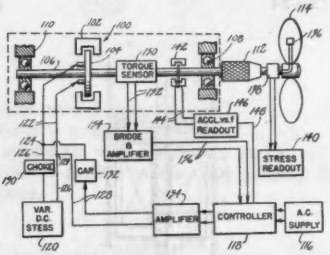
An apparatus for determining the shearing resistance of the soil is described, in which the rotation of vanes pressed into the soil and rotated by means of a rotation bar is determined by means of electric contacts disposed near said vanes in order to exclude the torsion angle of said bar from the measurement of the rotation of said vanes.

3,561,260
METHOD OF MEASURING TENSION IN A FASTENER
Harold C. Reynolds, Athens, Pa., assignor to Cooper Industries, Inc., a corporation of Ohio
Filed May 6, 1969, Ser. No. 822,261
Int. Cl. G01l 5/00
U.S. Cl. 73—88 9 Claims



An apparatus and method for measuring tension in a threaded fastener such as a bolt. Tension is measured by detecting the deflection of the integrally formed top surface of the bolt in the direction of the axis of the bolt shank, between a first reference surface on the axis of the shank and a second reference surface radially removed from the axis. Pneumatic, electrical and mechanical methods and apparatus for sensing and measuring the tension in the fastener as a function of the movement of the central reference surface relative to the peripheral reference surface, are disclosed. Also disclosed is a servomechanism in combination with the apparatus for sensing the tension in the fastener which acts to initiate a secondary operation such as shutting off a motive power mechanism driving the fastener when a predetermined tension has been reached.

3,561,261
TORSIONAL EXCITER APPARATUS
Jay P. Conniff, Lynchburg, Va., and William F. Walker, Dundee, Ill., assignors to Torin Corporation, Torrington, Conn., a corporation of Connecticut
Application July 16, 1968, Ser. No. 745,297, now Patent No. 3,495,447, which is a continuation-in-part of application Ser. No. 601,925, Dec. 15, 1966. Divided and this application June 30, 1969, Ser. No. 844,723
Int. Cl. G01n 3/22, 3/26
U.S. Cl. 73—99 18 Claims

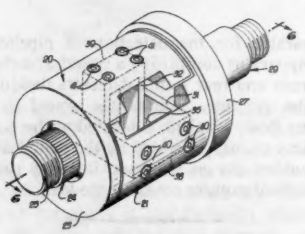


Torsional exciter apparatus comprising a DC motor with relatively fixed magnetic fields one of which is connected with an AC supply adjustable as to frequency and amplitude for providing torque pulsations of selected frequency and amplitude. The apparatus is usable as both a stationary and a rotary torsional shaker, as a preloading and torsional shaking device, and as an absorption dynamometer which transmits torsional pulsations to a driving device under test.

3,561,262
WATER SOLUBLE DEVELOPER
James S. Borucki, Chicago, and Bruce C. Graham, Arlington Heights, Ill., assignors to Magnaflux Corporation, Chicago, Ill., a corporation of Delaware
No Drawing. Filed Oct. 26, 1967, Ser. No. 678,176
Int. Cl. G01n 19/08
U.S. Cl. 73—104 12 Claims

A method for detecting flaws and other surface discontinuities by the liquid penetrant technique wherein an aqueous solution of a water soluble crystalline substance and a water dispersible surfactant serves as the developer for enhancing the visibility of flaw indications generated by the liquid penetrant. Said penetrant preferably contains a visible or fluorescent dye dissolved therein and is of an oily type which itself is not self-emulsifying and is substantially free of any added emulsifying agent. The developer, upon the evaporation or driving off of the water, forms an adherent film, or lattice layer, that is permeable to the liquid penetrant residue entrapped in any surface discontinuity so as to cause the penetrant residue to be drawn by capillarity or otherwise into said film and form therein flaw indications of high fidelity and resolution that may be easily detected upon inspection. The aqueous developer of this invention can optionally include film forming ingredients that effectively control the size of crystals formed upon drying; sequestering agents for use with hard water; and corrosion inhibiting agents; but the resulting film or lattice layer in all cases is entirely water soluble so that the surface of the test piece can be adequately cleaned by the use of water alone at the completion of the inspection step.

3,561,263
FORCE AND MOMENT DYNAMOMETER
Howard E. Ward, Tustin, and Mari A. Wolf, Santa Ana, Calif., assignors to Task Corporation, Anaheim, Calif., a corporation of Pennsylvania
Filed Aug. 8, 1968, Ser. No. 751,173
Int. Cl. G01l 5/22
U.S. Cl. 73—133 12 Claims

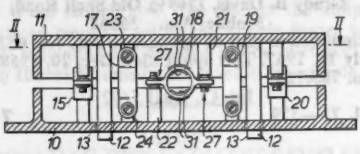


A force dynamometer of extreme simplicity and small size, employing crossed pairs of beams, and capable of measuring multiple force and moment components.

3,561,264
BALANCE FOR USE IN WIND TUNNELS
Ernest Frederick Needham, Highcliffe, and Kenneth Vincent Blanchard, Bottisham, Cambridge, England, assignors to Tracked Hovercraft Limited, London, England, a British company
Filed Mar. 12, 1969, Ser. No. 806,567
Claims priority, application Great Britain, Mar. 13, 1968, 12,269/68
Int. Cl. G01l 5/16; G01m 9/00
U.S. Cl. 73—147 7 Claims

A balance for testing models in a wind tunnel is located entirely within the model and includes a frame connected to the model and a sub-frame rigidly connected to ground. Interconnecting the frame and sub-frame are six separate links adapted together to sense the three forces

and three moments produced on the model in the normal three dimensions. The links sense only end-loading and



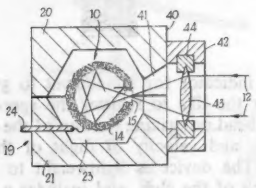
are in the form of rings so that end loads cause bending strain of the rings which is measured by strain gauges.

3,561,265

MEANS FOR THE MEASUREMENT OF THE ENERGY OF ELECTROMAGNETIC RADIATION

Arnold Johann Schmidt, 4 Spring Lane, Heslington, York, Yorkshire, England

Filed Dec. 19, 1967, Ser. No. 691,798
Claims priority, application Great Britain, Dec. 19, 1966, 56,608/66
Int. Cl. G01k *17/00*
U.S. Cl. 73—190 **13 Claims**



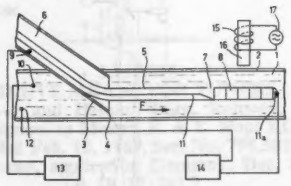
An apparatus for measuring the energy of electromagnetic radiation, such as a laser pulse, comprising a hollow body the wall of which is made up of a continuous length of wire which is tangled or wound so as to be opaque to the radiation, and means for measuring a change in the electrical resistance of the wire resulting from heating by an incident beam of the radiation entering through the inlet of the body.

3,561,266

DEVICE FOR MEASURING THE FLOW VELOCITY OF A FLUID

Michel Auphan, D'Orleans-Neuilly, and Jean Perilhou, Arnoux-Bourg la Reine, France, assignors, by mesne assignments, to U.S. Philips Corporation, New York, N.Y., a corporation of Delaware

Filed July 1, 1968, Ser. No. 741,664
Claims priority, application France, July 10, 1967, 113,761
Int. Cl. G01p *5/10*
U.S. Cl. 73—204 **9 Claims**



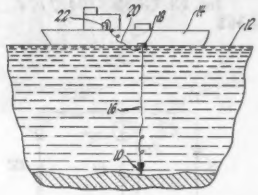
A device for measuring the rate of flow of blood in the human body comprising first and second paraxial tubes insertable into a blood channel for injecting therein a serum miscible with the blood and for removing a sample of the blood-serum mixture, respectively. Means are provided for measuring the velocity of the serum, and the temperature of the serum, the blood and the blood-serum mixture. An electromagnetic agitator is situated near the end of the second tube to improve the mixing of the blood and the serum.

3,561,267

BATHYTHERMOMETER

Robert B. Costello, Santa Barbara, Calif., assignor to General Motors Corporation, Detroit, Mich., a corporation of Delaware

Filed Apr. 10, 1964, Ser. No. 358,746
Int. Cl. G01k *13/00*
U.S. Cl. 73—344 **6 Claims**



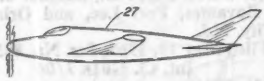
An aquatic probe to measure the temperature of a body of water is arranged to travel through the water from a moving ship in a free-fall descent. A coiled electrical conductor, connecting the probe to a recording station on the ship, is payed out from both the probe and the ship in such a manner so that the conductor will have practically no effect upon the descent characteristics of the probe.

3,561,268

EXPENDABLE BATHYTHERMOGRAPH

Frank Massa, Cohasset, Mass., assignor to Massa Division, Dynamics Corporation of America, Hingham, Mass.

Filed Jan. 14, 1969, Ser. No. 790,965
Int. Cl. G01k *1/02;* **G01l** *19/08*
U.S. Cl. 73—345 **14 Claims**



Free-falling underwater body which has a streamlined hull characteristic that causes a stable rate of fall through water. The body contains an oscillator connected to a piezoelectric transmitting transducer for radiating sound waves through the water at the oscillator output frequency. Two sensors alter the oscillator output frequency as a function of depth and temperature. A receiver on the surface of the water receives the radiated sound waves and prints out the temperature and depth of the water through which the falling body is then passing.

3,561,269

THERMOCHROMIC TEMPERATURE INDICATION

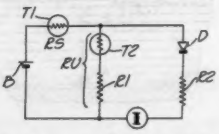
Joseph R. M. Seitz, Boston, Mass., assignor to Thermochromatic Systems, Inc., a corporation of Delaware

No Drawing. Continuation-in-part of application Ser. No. 636,601, May 8, 1967. This application Dec. 15, 1969, Ser. No. 885,373
Int. Cl. G01k *11/12*
U.S. Cl. 73—356 **17 Claims**

Temperature sensing devices and thermometers such as solid flexible strips employ reversible solid thermochromic materials. Temperature sensing devices expose to view a continuous length of solid material which reversibly changes color while solid, the composition and hence the transition temperature gradually varying along the length. Compounds of the same ingredients with proportions varying along the length are disclosed, illustrated

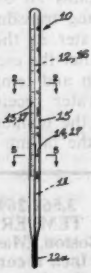
by X_2HgI_4 where X_2 comprises more than one metal in varying proportions. The devices employing flexible substrates are affixable to numerous surfaces, including labels on merchandise and the human body. Methods for production employ float zone techniques, and deposition, e.g., by printing or vapor condensation.

3,561,270
AGE INDICATING DEVICE
Donald R. Sessler, Temple City, Calif., assignor to Dynametric, Inc., Pasadena, Calif., a corporation of California
Filed June 26, 1968, Ser. No. 740,053
Int. Cl. G01k *3/04, 7/24*
U.S. Cl. 73—362 **12 Claims**



An age indicator is provided for ascertaining the effect of exposure of articles, particularly unused photographic sheet material, to varying temperature conditions on the useful life of the article. A voltage is developed as a function of the temperature conditions to which the article is exposed at various times. This voltage is applied to a circuit that includes a diode for developing an electrical current proportional to the aging rate and this current is integrated as a function of time to produce the desired indication of the aging of the article.

3,561,271
THERMOMETERS
Luis Camejo, Union City, N.J., assignor of one-third each to Jose Bovantes, Fort Lee, and Orlando Martines, Union City, N.J.
Filed May 19, 1969, Ser. No. 825,547
Int. Cl. G01k *1/06*
U.S. Cl. 73—371 **4 Claims**

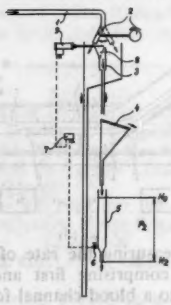


A mercury thermometer constructed to facilitate the reading of temperatures has the entire interior bore portion including the bulb coated with a fluorescent material. The empty bore portion under magnification will appear dull and it will appear more intense in color or brightness when the bore contains the mercury. The scale graduations and numerals may also have brightening elements associated therewith to read the mercury level more easily.

3,561,272
SPEED INDICATOR FOR CLUBS, BATS AND THE LIKE
Grady B. Davis, 1769½ Old Shell Road, Mobile, Ala. 36604
Continuation-in-part of application Ser. No. 652,897, July 12, 1967. This application Dec. 20, 1968, Ser. No. 785,725
Int. Cl. G01l *5/02*
U.S. Cl. 73—379 **7 Claims**

A speed indicator for attachment to golf clubs, baseball bats or the like to register the speed of movement of the club head or striking portion of the bat from which the distance and velocity of flight of the ball may be calculated. The device is lightweight to avoid influence on the swing of the club, and includes a support releasably attachable to the club or bat adjacent the striking portion thereof, and a movable indicator carried by and frictionally engaging said support to retain a position relative to said support to which position it is moved by a weight which is spring retracted immediately upon termination of centrifugal force due to the swing of the club to avoid further influence on the indicator.

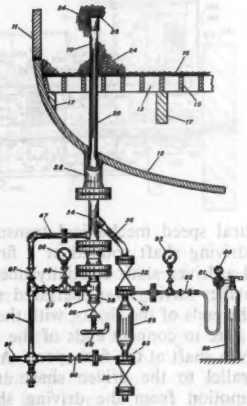
3,561,273
METHOD FOR CONTINUOUS SAMPLING OF A SLURRY FLOW
Aimo Juhani Tanila, Pyhakumpu, Finland, assignor to Outokumpu Oy, Helsinki, Finland, a corporation of Finland
Filed Nov. 8, 1968, Ser. No. 774,408
Claims priority, application Finland, Apr. 17, 1968, 1,055/68
Int. Cl. G01n *1/20*
U.S. Cl. 73—423 **3 Claims**



A continuous sample of a slurry flow to be analyzed is obtained by continuously swinging the slurry flow back and forth in order to change the direction of the slurry

flow so that the slurry flow only momentarily hits a sampling funnel. The portion of the slurry flow passing into and through the sampling funnel into a sample feeder for analysis is the sample flow. The level of the sample flow is maintained constant within the sample feeder by automatically regulating the opening of the inlet port of the sampling funnel by sensing the level in the sample feeder.

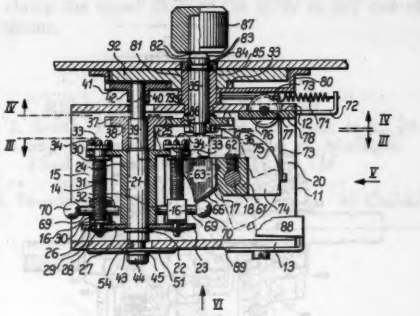
3,561,274
ROTATING DISK CATALYST SAMPLER
Willard M. Haunschild, Walnut Creek, Calif., assignor to Chevron Research Company, San Francisco, Calif., a corporation of Delaware
Filed July 2, 1969, Ser. No. 838,581
Int. Cl. G01n *1/10*
U.S. Cl. 73—424 **5 Claims**



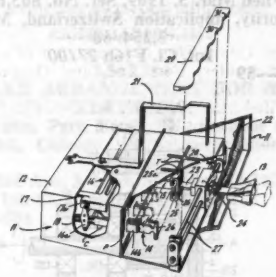
The specification describes apparatus for withdrawing a catalyst sample during operation of a catalytic ractor through a sample tube extending to a desired sample point in the reactor. A rotatable member, preferably in the form of a plate or disk, is mounted on the end of a shaft extending through the tube and has a port formed in it that registers at one position with a port in the upper end of the sample tube. A handle turns the shaft so that the disk will mechanically agitate catalyst particles to prevent them from bridging across the ports when they are in register. This assures easy flow into the tube and through space formed by the shaft and tube to an exit port exterior to the vessel. The sample is then caught in a sample receiver. The sample receiver can be isolated from the catalytic reactor to permit the catalyst sample to be recovered without disturbing the catalytic reactor. The system is particularly useful in fixed bed reactors to sample nonspherical catalyst particles that have a relatively high angle of repose.

3,561,275
DRIVE MEANS FOR TUNERS
Rudolf Mayer and Helmut Storz, Rottweil, Germany, assignors to Messrs. R. & E. Hopt KG
Filed Feb. 12, 1969, Ser. No. 798,581
Claims priority, application Germany, Dec. 27, 1968, P 18 17 261.7
Int. Cl. F16h *35/18*
U.S. Cl. 74—10.6 **20 Claims**

A drive means for tuners, especially tuners for television sets, having a drum supported in a housing so as to permit it to be rotated about its longitudinal center line. The drum is provided with a plurality of running nuts spaced along its circumference and arranged in a manner enabling them to be adjusted in the longitudinal direction of the drum. The running nuts are selectively brought into engagement with a scanner member operatively connected to tuning elements of the tuner by rotating the drum. Control cams ensure the transition of the scanning member from one running nut to another when the drum is rotated.



3,561,276
ELECTRONIC TUNING APPARATUS
Glenn E. Gould, Rockledge, Fla., and Francis W. Van Benthem, Woodstock, N.Y., assignors to Philco-Ford Corporation, Philadelphia, Pa., a corporation of Delaware
Filed May 5, 1969, Ser. No. 821,831
Int. Cl. F16h *35/18*
U.S. Cl. 74—10.37 **8 Claims**

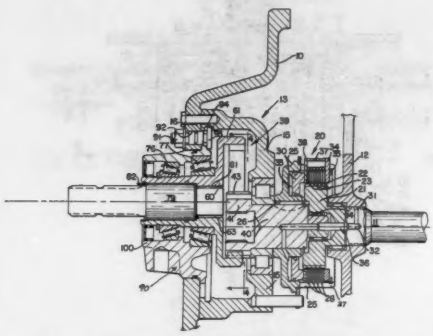


Push-button operated tuning apparatus, including a plurality of elongated parallel slide members and a single manually operable push-button translatable laterally of said slide members to any one of a plurality of detented positions in which it may be depressed to actuate one of said slide members and tune the apparatus to a preselected frequency corresponding to that position.

3,561,277
MULTISPEED INDEPENDENT POWER TAKEOFF UNIT
Ralph C. Boyle, Hinsdale, and Leonard Paulius, Clarendon Hills, Ill., assignors to International Harvester Company, Chicago, Ill., a corporation of Delaware
Filed Oct. 6, 1969, Ser. No. 864,091
Int. Cl. F16h *37/02, 1/06*
U.S. Cl. 74—15.4 **12 Claims**

A change speed power drive mechanism having a housing, an input member extending into the housing, and an

output member extending out of the housing and including a movable means carried by said housing and journaling one of said members such that in a first position said output member is coaxially aligned with the input member and in another position said output member is driven



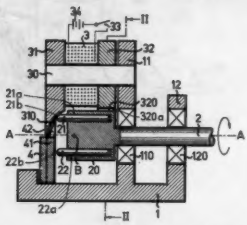
by said input member, with adaptor means being provided to take power directly from said input member when said output member is in coaxial alignment with said input member or to take power from said output member when such is in said second position.

3,561,278

MALTESE-CROSS TRANSMISSION OR DRIVE ARRANGEMENT

Werner Mueller, Aarau, Switzerland, assignor to Contraves AG, Zurich, Switzerland, a corporation of Switzerland

Filed Mar. 3, 1969, Ser. No. 803,679
Claims priority, application Switzerland, Mar. 5, 1968, 3,254/68
Int. Cl. F16h *27/00*
U.S. Cl. 74—89 **7 Claims**



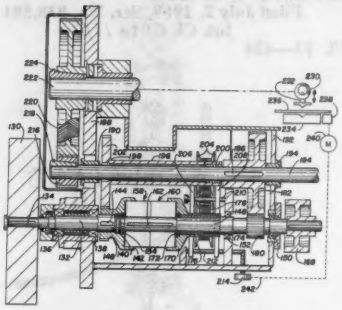
There is disclosed a Maltese-cross drive arrangement which can be switched in and out incorporating a continuously driven drive rotor having diametrically opposed bores in which there are arranged magnetic entrainment pin members engageable with a stepwise indexable driven element for stepwise displacement thereof. The entrainment pin members can be selectively controlled for movement from an ineffectual rest position into an operable working position where such operably engage with said driven element. According to the invention, the drive rotor and the axially displaceable entrainment pin members form components of a ferromagnetic work circuit which additionally includes first and second pole shoes, one of the pole shoes having a predetermined configured guide surface. Through appropriate operation of the ferromagnetic work circuit each entrainment pin member can be selectively displaced from its rest position into its working position where it engages with the driven element for stepwise displacement of the latter.

3,561,279

PLURAL SPEED TRANSMISSION SYSTEM

Jene Arnold Beneke, Dallas, Tex., assignor to Verson Manufacturing Company, Dallas, Tex., a corporation of Texas

Filed Nov. 4, 1968, Ser. No. 773,140
Int. Cl. F16h *3/08*
U.S. Cl. 74—360 **5 Claims**



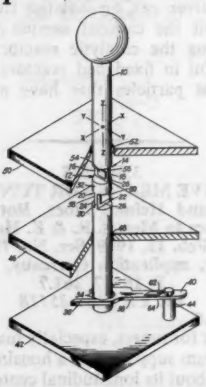
The plural speed mechanical transmission system includes a driving shaft rotated at a first speed by a flywheel and a driven shaft coaxially lined with the driving shaft. Clutches having two energized states are disposed adjacent the ends of the shafts, with the clutches operable in a first state to connect ends of the shafts for rotation of the driven shaft at the first speed. An idler gear is disposed parallel to the driven shaft and is operable to transmit motion from the driving shaft to rotate the driven shaft at a second different speed when the clutches are in a second state. Structure is connected between the idler gear and one of the shafts for allowing selective variance of the magnitude of the second speed.

3,561,280

THREE AXIS STRAIN GAGE CONTROL DEVICE

John MacPhee, Rowayton, Conn., and Edgar R. Lodi, York, Pa., assignors to American Machine and Foundry Company, a corporation of New Jersey

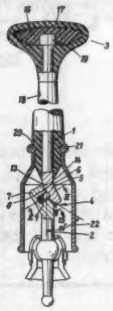
Filed Oct. 23, 1968, Ser. No. 769,831
Claims priority, application Great Britain, Aug. 22, 1968, 40,205/68
Int. Cl. G05g *9/00*; B64c *13/04*
U.S. Cl. 74—471 **1 Claim**



A control device which translates a force applied to a member into signals representative of the X, Y and Z

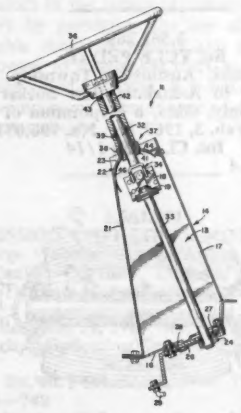
components of the force applied to the member, the signals being generated by strain gages coupled to sense the application of the force applied to the member along the various axes.

3,561,281
SAFETY CONTROL LEVER
Thomas Wilfert, 140 N. 15th St., Philadelphia, Pa. 19102
Filed Sept. 6, 1968, Ser. No. 757,846
Int. Cl. G05g *9/00, 25/00*
U.S. Cl. 74—473 **18 Claims**



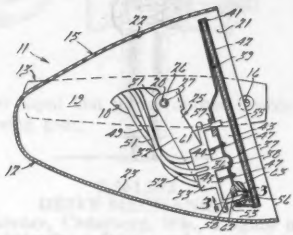
A safety control lever means adapted especially for a shift stick of motor vehicle transmissions. There are coupling means interconnecting adjacent end portions of first and second lever sections forming longitudinal extension relative to each other. The coupling means interconnection is operable automatically to yield for safety disengagement of the two lever sections in response to a shock-like load acting upon the first of the lever sections.

3,561,282
ADJUSTABLE ANGLE STEERING WHEEL MECHANISM FOR RIDING MOWER
Gordon L. Hershman, La Grange, and Gerald N. Borchardt, Clarendon Hills, Ill., assignors to International Harvester Company, Chicago, Ill., a corporation of Delaware
Continuation of application Ser. No. 743,737, July 10, 1968. This application Feb. 5, 1970, Ser. No. 7,404
Int. Cl. B62d *1/18*
U.S. Cl. 74—493 **11 Claims**



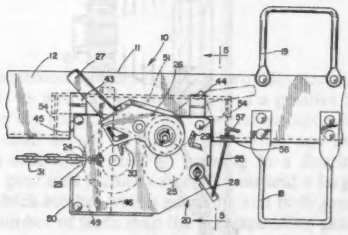
An adjustable steering assembly for a riding mower and having a pair of relatively movable steering shafts interconnected by a flexible connector. Guide means restricts angular movement of the upper steering shaft to a plurality of positions which include (1) a collapsed, storage position; (2) a swung-away, access position; and (3) intermediate operating positions. A locking device operates to clamp the upper shaft to the guide in any one of said positions.

3,561,283
REMOTE CONTROL MIRROR
Robert J. Smith, Farmington, Mich., assignor to C. M. Hall Lamp Company, a corporation of Michigan
Filed Oct. 18, 1968, Ser. No. 768,724
Int. Cl. F16c *1/12;* **G02b** *5/08*
U.S. Cl. 74—501 **10 Claims**



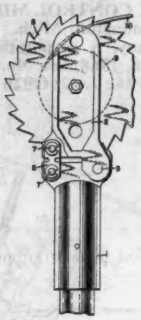
A remote controlled, outside, automotive rear view mirror embodying a streamlined outer housing in which a mirror is pivotally supported about an asymmetric pivot pin. The mirror includes a backing plate to which the reflective portion is affixed by a snap flange arrangement and which defines a socket and spaced guides that coact with fixed pins to preclude any substantial rotation of the mirror while permitting its pivotal adjustment.

3,561,284
HANDBRAKE ARRANGEMENT FOR RAILWAY FLAT CARS
Donald B. Yates, Park Forest, Ill., assignor to Pullman Incorporated, Chicago, Ill., a corporation of Delaware
Filed Apr. 3, 1969, Ser. No. 813,217
Int. Cl. F16h *21/44;* **B65j** *1/28*
U.S. Cl. 74—506 **4 Claims**



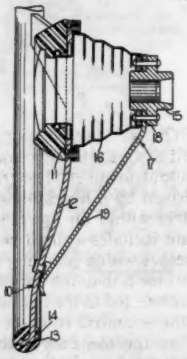
A handbrake arrangement for a flat deck railway car wherein the handbrake is positioned below the deck and within AAR clearance requirements, the side sill of the car having an aperture accommodating the brake housing, and said housing being so mounted and having provisions whereby the chain and rod mechanism which is connected to the foundation brake rigging and handbrake extends therebetween in a direct linear relation without the requirements of either pulleys or guides.

3,561,285
ACTUATING LEVER FOR WINCH HOIST
Roland C. Hallen, North Grafton, Mass., assignor to Lincoln Precision Machining Company, Grafton, Mass., a corporation of Massachusetts
Filed June 23, 1969, Ser. No. 835,365
Int. Cl. G05g 1/04
U.S. Cl. 74—524 2 Claims



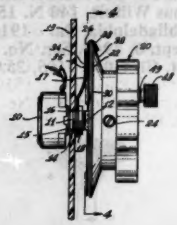
An actuating lever for a ratchet operated winch hoist, the lever having a frangible link interposed between the handle and the pivot center, in parallel with another similar link which is not frangible but has lost motion at its end connections.

3,561,286
STEERING WHEELS
Stanley John Edge, Sutton Coldfield, and Trevor John Williams, Henley in Arden, Solihull, England, assignors to Clifford Covering Company Limited, Birmingham, England
Filed Jan. 7, 1969, Ser. No. 789,524
Claims priority, application Great Britain, Jan. 17, 1968, 2,487/68
Int. Cl. B62d 1/04
U.S. Cl. 74—552 5 Claims



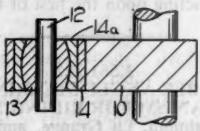
A steering wheel comprises a frame having a centre portion, spokes and a rim. The centre portion is mounted on a collapsible impact-absorbing press carried by a hub. The hub is also connected by arms to the spokes by means of connections which can detach on impact.

3,561,287
ADJUSTABLE DETENT CONTROL KNOB
James F. Lawrence, Jr., 13161 Barrett Hill Circle, Santa Ana, Calif. 92705
Filed June 13, 1969, Ser. No. 833,003
Int. Cl. G05g 1/10
U.S. Cl. 74—553 6 Claims



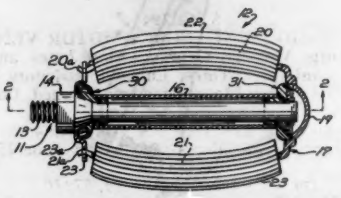
An adjustable knob for application to control devices such as panel-mounted rheostats, potentiometers, tuning controls, etc., provided with an adjustable detent device which can be set in a selected position of the knob, and permits return of the knob to that position without need to observe or remember it.

3,561,288
CAM AND TAPPET MECHANISM
Anil Kumar Mishra, Pittsburgh, Pa., assignor to C.A.V. Limited, London, England
Filed Feb. 4, 1969, Ser. No. 796,380
Claims priority, application Great Britain, Feb. 7, 1968, 5,993/68
Int. Cl. F16h 53/00
U.S. Cl. 74—569 2 Claims



A cam and tappet mechanism including a cam and a roller rotatably mounted upon a tappet, with the tappet being mounted in a manner to permit of angular movement of the roller in a plane containing the axis of rotation of the cam.

3,561,289
BICYCLE PEDAL
Martin R. Baginski, Austinberg Township, Ashtabula, Ohio, assignor to Ashtabula Bow Socket Company, Ashtabula County, Ohio, a corporation of Ohio
Filed Feb. 3, 1969, Ser. No. 796,071
Int. Cl. G05g 1/14
U.S. Cl. 74—594.4 20 Claims



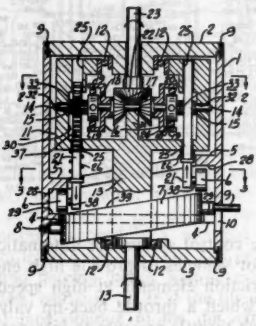
A bicycle pedal comprises a pedal axle and a pedal body. The pedal body includes pedal body members which

are supported on the pedal axle and a plastic bearing member which functions as a means for supporting the pedal body on the pedal axle. The plastic bearing member is a part of the pedal body and has a portion which is axially disposed between parts of the pedal body member.

3,561,290
POSITIVE DRIVE LINEALLY VARIABLE SPEED DEVICE

George W. Ruck, 5435 Park Ave., Bethel Park, Pa. 15102

Filed Apr. 14, 1969, Ser. No. 815,871
Int. Cl. F16h *35/02, 37/00*
U.S. Cl. 74—679 15 Claims



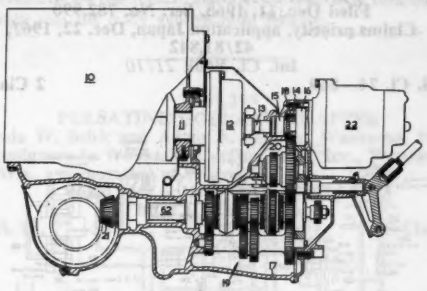
An axial shaft planetary gear type, lineally variable speed device, the sun meshed planet gears of which are each independent and rotatably supported through a connecting clutch by their respective rack operated pinion, the stroke of the rack of which varies the speed of the output shaft over that of the input shaft. A shaft means transverse of the axial input and output shafts of the transmission is provided and is independently rotatably supporting the planet gears with their respective clutches and pinions, the latter driven by their respective racks movable parallel relative to the rotary aligned axis of the device and carrying antifriction followers engaged by a track means adjustably movable axially to obtain variable speeds over the one-to-one ratio of the speed device. The use of the transverse shaft in the rotary planetary system simplifies the structure by permitting the use of parallel aligned racks rotatable about the central axis of the device and having followers to engage the track means and produce a straight line speed variation. It is not a sinusoidal relation. This is important in many uses of this type of device in power transmission.

3,561,291
TRANSMISSION UNIT FOR A MOTOR VEHICLE

Henry George Webster, George Arthur Jones, and John Payne, Canley, Coventry, England, assignors to The Standard Triumph Motor Company Limited, Coventry, England

Filed June 19, 1969, Ser. No. 834,645
Claims priority, application Great Britain, June 25, 1968, 30,153/68
Int. Cl. F16h *37/06, 3/44, 57/10*
U.S. Cl. 74—740 12 Claims

A transmission unit for a motor vehicle has a power input shaft, a coaxial driving gear connected to drive a parrallelly spaced power input gear of a main change-speed gearing, and the power input shaft is connected to the driving gear by an auxiliary change-speed gearing

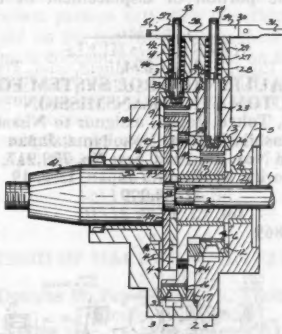


having power input and power output members coaxial with the driving gear.

3,561,292
DRIVE MECHANISM

Ervin W. Lorence, Cedarburg, Wis., assignor to Lorence Manufacturing Corp., Milwaukee, Wis., a corporation of Wisconsin

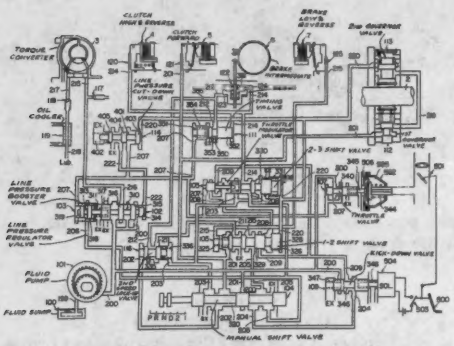
Filed Feb. 11, 1969, Ser. No. 798,375
Int. Cl. F16h *1/28*
U.S. Cl. 74—804 9 Claims



A transmission which selectively provides multiple output speeds as well as free wheeling and a positive braking action for the output member. The transmission includes an input shaft driven by a hydraulic motor and the shaft drives an eccentric within an opening in a floating gear unit. The gear unit includes a small gear and a large gear, each of which meshes with a gear ring and both gears have a lesser number of teeth than the corresponding gear rings. The gear unit is connected to the output shaft by a member which converts the eccentric rotation of the gear unit to concentric rotation for the output shaft.

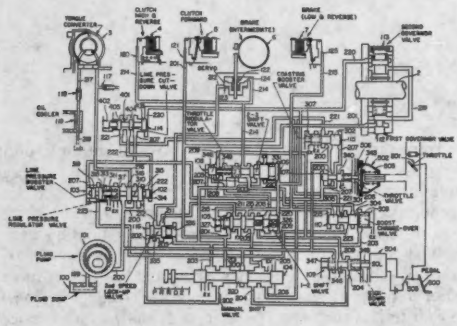
Each gear ring can be selectively changed between a fixed and a rotatable condition. When either of the gear rings is in a fixed condition, a speed reduction is provided for the output shaft. When both gear rings are in a rotatable condition a free wheeling condition is achieved in which the output shaft can rotate freely and if both gear rings are in a fixed or nonrotatable position a positive braking action is achieved.

3,561,293
HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION
Shojiro Fujita, Fujisawa, and Toshio Miyazaki, Yokohama, Japan, assignors to Nissan Jidosha Kabushiki Kaisha, Yokohama, Japan
Filed Dec. 11, 1968, Ser. No. 782,990
Claims priority, application Japan, Dec. 22, 1967, 42/81,842
Int. Cl. B60k *21/10*
U.S. Cl. 74—869 2 Claims



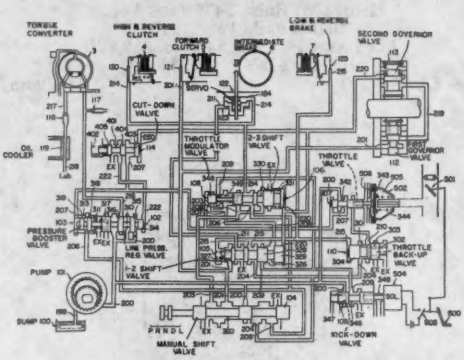
A hydraulic control system for an automatic transmission for vehicles to attain proper engagement and disengagement timing at upshifting, the system providing a timing valve means operating at low throttle pressure and to exhaust the engage side chamber of a servo only at an intermediate portion of displacement of the valve spool.

3,561,294
HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION
Tetsuya Iijima, Tokyo, Japan, assignor to Nissan Jidosha Kabushiki Kaisha, Yokohama, Japan
Filed Nov. 29, 1968, Ser. No. 779,917
Claims priority, application Japan, Dec. 19, 1967, 42/80,979
Int. Cl. B60k *21/10*
U.S. Cl. 74—869 2 Claims



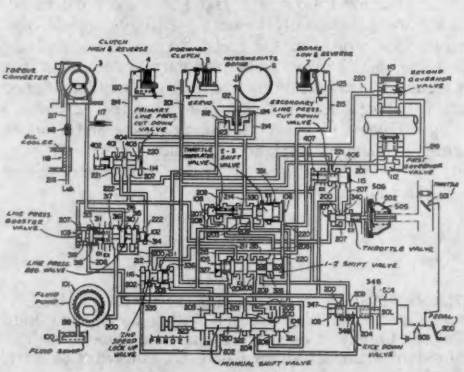
In a hydraulic control system for an automatic transmission of a vehicle, to control line pressure actuating friction clutches and brakes, two valves are provided to decrease line pressure stepwise at starting conditions all through the selected positions and to increase line pressure stepwise at low throttle high speed conditions only when a low gear ratio causing an engine braking condition is selected.

3,561,295
HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION
Tetsuya Iijima, Tokyo, Japan, assignor to Nissan Jidosha Kabushiki Kaisha, Yokohama, Japan
Filed Dec. 3, 1968, Ser. No. 780,790
Claims priority, application Japan, Dec. 19, 1967, 42/80,976, 42/80,977
Int. Cl. B60k *21/10*
U.S. Cl. 74—869 6 Claims



A hydraulic control system for automatic transmission mechanisms for vehicles to provide high engaging torque capacity of friction elements at high speed low throttle condition, in which a throttle back-up valve is provided to produce high throttle pressure to increase line pressure. The valve is actuated only at a specified manually shifted low gear ratio position.

3,561,296
HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION
Tetsuya Iijima, Tokyo, Japan, assignor to Nissan Jidosha Kabushiki Kaisha, Yokohama, Japan
Filed Nov. 29, 1968, Ser. No. 779,927
Claims priority, application Japan, Dec. 19, 1967, 42/80,978
Int. Cl. B60k *21/10*
U.S. Cl. 74—869 3 Claims

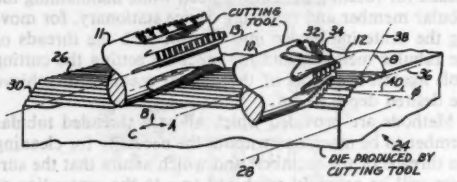


A hydraulic control system for automatic transmission mechanism for a vehicle to remedy shock engagement of the clutch or brake upon starting the vehicle which provides a valve means to introduce fluid pressure to pressure regulator valve to reduce line pressure which is only effective at low speed low engine torque conditions.

3,561,297
METHOD OF FORMING THREAD ROLLING DIE

Oren C. Wilkins, Redondo Beach, Calif., assignor to Hi-Shear Corporation, Torrance, Calif., a corporation of California

Original application Apr. 10, 1967, Ser. No. 629,736, now Patent No. 3,481,178, dated Dec. 2, 1969. Divided and this application May 6, 1969, Ser. No. 842,049
Int. Cl. B21k *21/00*
U.S. Cl. 76—101 2 Claims

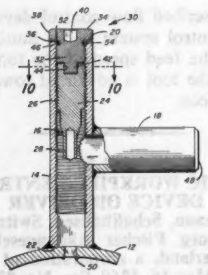


According to the present invention a unique roll die is formed by cutting protrusions on the die, and the die produced may be either in the round or in the flat form. In the round form the protrusions are helical and in the flat form they are parallel, substantially straight, and slanted. The protrusions in the die are formed with first protrusion means disposed in a nominal face having a generator parallel to a die axis. The first protrusion means has leading and lagging flanks. Second protrusion means is also included, which is cut into the die and is disposed in a nominal face oblique to the die axis. The second protrusion means also has leading and lagging flanks, and they are parallel, respectively to the leading and lagging flanks of the first protrusion means. Thus, the first protrusion means is disposed generally parallel to the second protrusion means, and the second protrusion means recedes from the first protrusion means and toward the axis, but both are compatible with a thread which is formed by both of them.

3,561,298
REMOVABLE SEAL PLUG FOR CLOSING THE UPPER END OF SELF-PUNCHING T FITTINGS

Howard T. De Graffenreid, Inola, and Judson C. Cole, Tulsa, Okla., assignors to Continental Industries, Inc., Tulsa, Okla., a corporation of Oklahoma

Filed Apr. 9, 1969, Ser. No. 814,641
Int. Cl. B23b *41/08*
U.S. Cl. 77—42 16 Claims

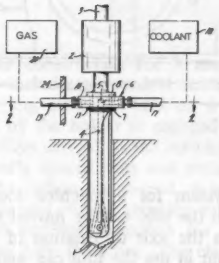


This invention relates to a removable seal plug for closing the upper end of a self-punching T fitting. More particularly, the invention relates to a self-punching T fitting including a tubular body adapted to be welded to a pipe, a punch threadably positioned within the tubular body adaptable for rotation to engage and punch a hole in the pipe, and an improved seal plug member for closing the upper end of the tubular body member, the plug member serving to accurately position and prevent the movement of the punch member in the body and to securely seal the body against fluid leakage.

3,561,299
PULSATING COOLANT ADAPTER

Clyde W. Brisk and Adam A. Schiller, Waukesha, Wis., assignors to Waukesha Cutting Tools, Inc., Waukesha, Wis., a corporation of Wisconsin

Filed May 6, 1969, Ser. No. 822,247
Int. Cl. B23b *51/06*
U.S. Cl. 77—55 5 Claims

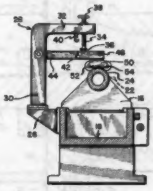


An adapter for use with a spade drill or the like which has a coolant passage extending therethrough. A bushing is mounted on the tool for rotation therewith, and a collector ring is concentrically mounted on the bushing. The collector ring is fixed against rotation. A plurality of valve openings alternately connect the drill passage with a source of coolant or air. The coolant flow is substantially continuous, interrupted by short bursts of air to provide a pulsing effect.

3,561,300
METHOD OF MACHINING AN ELONGATED SHAFT

Douglas W. Peasley, 3114 S. Austin Road, Cicero, Ill. 60650

Filed Mar. 19, 1968, Ser. No. 714,235
Int. Cl. B23b *3/00*
U.S. Cl. 82—1 11 Claims



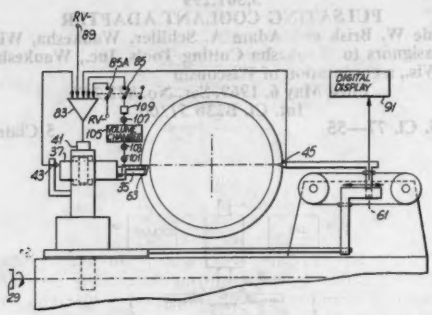
A method and apparatus are provided for steadying an elongated horizontally disposed rotating shaft against oscillatory movement during a turning operation. In the apparatus disclosed, downward pressure is applied at spaced points along the shaft through sets of rollers formed of a vibration-damping material.

3,561,301

MACHINE TOOL CONTROL SYSTEMS

Royds Sharp and Malcolm Bath, Glasgow, Scotland, assignors to National Research Development Corporation, London, England, a corporation of Great Britain

Filed Jan. 19, 1968, Ser. No. 699,073
Claims priority, application Great Britain, Jan. 27, 1967, 4,241/67
Int. Cl. B23b *25/06*
U.S. Cl. 82—2 **9 Claims**



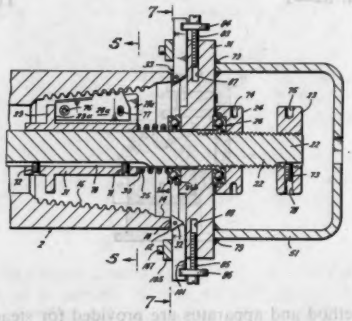
A control system for a machine tool comprising a motor by which the tool can be moved radially towards and away from the axis of rotation of a workpiece at such a speed that in use the tool can maintain the circularity of the workpiece even if the workpiece is somewhat eccentric from the axis of rotation, the system including first and second measuring gauges and control means for the motor arranged to combine the outputs of the first and second gauges and to control the motor and so the radial position of the tool in such a manner that the diametrical distance between the part of the workpiece opposite the second gauge and the part of the workpiece acted on by the tool remains substantially constant.

3,561,302

METHOD AND APPARATUS FOR MACHINING TUBULAR MEMBERS

Howard N. Keener, Alamo, Tex., assignor to Texas Technical Enterprises, Inc., Houston, Tex., a corporation of Texas

Filed Apr. 24, 1968, Ser. No. 723,843
Int. Cl. B23b *3/22, 5/00*
U.S. Cl. 82—1 **17 Claims**



Apparatus is provided for simultaneously machining plural faces of a threaded tubular member. The apparatus includes an elongate longitudinal shaft adapted to be disposed into the threaded member and along the center line thereof. Onto this shaft is mounted a centering device which includes a plurality of radially extending fins being connected to snag sections, the snag sections being adapted to move into engagement with the threads of the tubular member to be machined. A generally disk-shaped cutting head is also disposed on the shaft such that it is capable of rotation about the shaft. The cutting head contains a number of individual cutting tools capable of machining the various faces of the tubular member. Means are also included for rotating the cutting head while maintaining the tubular member and centering device stationary, for moving the centering device into contact with the threads of the tubular member, and for precisely setting the cutting tools against the faces of the tubular member to achieve the desired depth of cut.

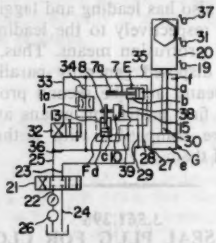
Methods are provided which allow a threaded tubular member to be machined without the necessity for cleaning the threads of the member, and which assure that the surfaces will be properly machined true to the center line of the tubular member.

3,561,303

FLOW CONTROL DEVICES FOR TURRET SLIDES

Hirofumi Tomiyama, 1000 Akiwa, Uedo-shi, Nagano-ken, Japan

Original application Aug. 1, 1967, Ser. No. 657,605, now Patent No. 3,493,170. Divided and this application June 18, 1969, Ser. No. 842,767
Int. Cl. B23b *21/00*
U.S. Cl. 82—21 **1 Claim**



Only one flow control valve including a rotary throttle valve stem is used, and the rotary valve stem is rotated by a rack and gear mechanism which is actuated by a rotary indexing member. The rotary indexing member carries a plurality of adjustable stops that limit the stroke of the rack.

The above described flow control device is utilized in a turret slide control system of an automatic turret device to control the feed speed of the tool as well as the speed at which the tool is advanced toward or retracted from the workpiece.

3,561,304

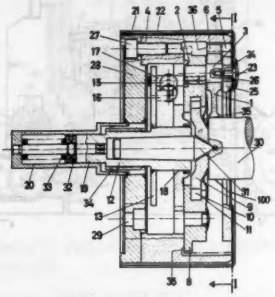
AUTOMATIC WORKPIECE ENTRAINMENT DEVICE OR DRIVER

Bernhard Bachmann, Schaffhausen, Switzerland, assignor to Firma Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland, a corporation of Switzerland

Filed May 16, 1969, Ser. No. 825,200
Claims priority, application Switzerland, May 21, 1968, 7,557/68
Int. Cl. B23b *33/00*
U.S. Cl. 82—40 **9 Claims**

There is disclosed an automatic workpiece entrainment device for attachment to machine tool spindles, especially the spindles of lathes, which comprises a freely rotatable

support ring means mounted for radial and axial play with at least two clamping jaws being pivotably mounted at said support ring means. There is also provided a body member having force transmission means, said at least two clamping jaws engaging with said force transmission means so that upon relative rotation of said body member with respect to said support ring means in the machining rotational direction there occurs pivoting of said clamping jaws in the closing direction. Center means serve



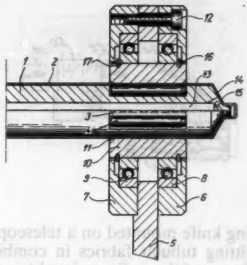
to center the workpiece, and center chuck means cooperate with such center means. Screw means fixedly arranged and coaxially extending with respect to the body member guide the center chuck means so that upon axial displacement thereof it simultaneously performs a rotational movement. The support ring means, upon axial displacement thereof against the side facing away from the receiving side of the entrainment device, comes into rigid or non-relative rotational engagement with the body member.

3,561,305

TUBE HOLDER

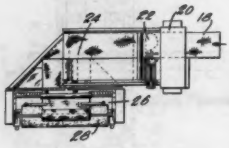
Reinhard Schneider, Ostermundigen, Switzerland, assignor to Polytype AG, Freiburg, Switzerland

Filed May 20, 1969, Ser. No. 826,235
Claims priority, application Sweden, May 24, 1968, 7,010/68
Int. Cl. B23b *33/00*
U.S. Cl. 82—40 **5 Claims**



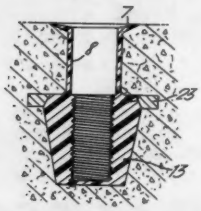
A tube holder construction for a multiple stationed automatic lathe includes a mandrel centrally positioned between a clamping assembly held on a turntable. The tube to be held by the holder is engaged over the mandrel and over rollers carried by the mandrel in a plurality of circumferentially spaced slots and projecting outwardly therefrom. The rollers are shaped or mounted so that they present a tapered conical gripping surface having an entrance end of smaller dimension for facilitating the positioning of the tube thereover. The clamping member which is carried by the turntable includes a ring which is adapted to engage over the tube at a location overlying the rollers of the mandrel.

3,561,306
METHOD AND APPARATUS FOR TREATING TUBULAR FABRICS
Edward I. Aronoff, 605 Dorais St., St. Laurent, Quebec, Canada
Filed Jan. 4, 1968, Ser. No. 695,605
Claims priority, application Canada, Dec. 29, 1967, 008,880
Int. Cl. B26d *7/14*
U.S. Cl. 83—18 **20 Claims**



A rotary slitting knife mounted on a telescopically adjustable table for slitting tubular fabrics in combination with a fabric opening frame of three-dimensional triangular configuration. An uncurler device at the discharge of the opening frame including a pair of continuous belts extending transversely at each edge of the opened web of tubular fabric and in functional engagement therewith, and in combination with air nozzles pointed outwardly and in the direction of the edge of the fabric and a pair of driven rollers for rolling up the fabric.

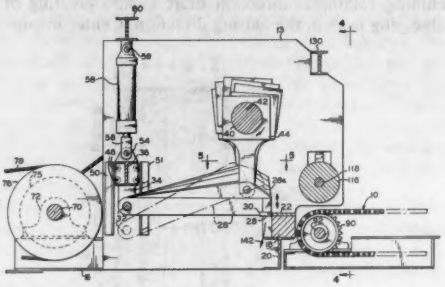
3,561,307
FASTENING DEVICE
Louis Aackersberg Mortensen, Kongevejen 35, Birkerod, Denmark
Filed Apr. 4, 1968, Ser. No. 718,898
Claims priority, application Denmark, Apr. 5, 1967, 1941/67
Int. Cl. F16b *37/00, 39/22*
U.S. Cl. 85—32 **9 Claims**



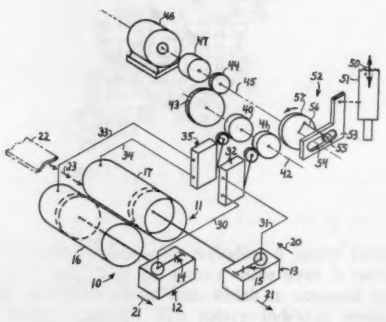
A plastic mold-in wall plug is provided which has a thin wall tubular section and an adjacent thick wall section having an inner threaded bore whereby when the plug is molded into a cement structure or the like and fastening means are screwed thereinto and tightened, the stress created in the wall plug will be distributed over a large portion of the cement surrounding the wall plug and this distribution will be away from the cement surface thereby eliminating the risk of bursting off a portion of the concrete.

3,561,308
COMMINUTOR
Stanley V. Ehrlich, Portland, Oreg., assignor to Western Manufacturing, Inc., Portland, Oreg., a corporation of Oregon
Filed Aug. 1, 1968, Ser. No. 749,514
Int. Cl. B26d *5/20*
U.S. Cl. 83—214 **15 Claims**

A comminutor for reducing scrap materials and particularly rubber tires to particulate form. A series of aligned reciprocating knives driven sequentially coact in shearing relationship with an anvil to nibble material advanced at intervals onto the anvil by a conveyor. Mechanism is provided to shift the pivotal axes of the knives periodically so as to withdraw the knives from the anvil as they continue to reciprocate and to advance and side-shift the conveyor when the knives are withdrawn so that particles are severed from the material during each cutting cycle.



3,561,309
DUPLEX STOCK FEEDER
Albert W. Scribner, 6 Country Club Road, Darien, Conn.
Filed Oct. 17, 1968, Ser. No. 768,432
Int. Cl. B26d *5/22*
U.S. Cl. 83—222 **33 Claims**

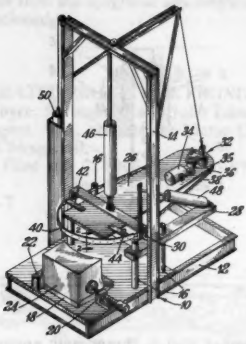


A duplex stock feeder for punch presses having a pair of opposed edge-gripping unitary feed units that are relatively laterally adjustable. The fluid motors for actuating the stock advancing feed slides are controlled by one valving means while the fluid motors for actuating the stock gripping means on said slides are controlled by a separate valving means. These two valving means are operated by an independent power means whose effective actuating speed is governed by the reciprocating movement of the press ram.

3,561,310
CUTTING AND FORMING APPARATUS
Lawrence M. Deeks, Westlake, Ohio, and Edward J. Kleber, Jr., Niagara Falls, N.Y., assignors to Union Carbide Corporation, a corporation of New York
Filed Sept. 11, 1967, Ser. No. 666,632
Int. Cl. B26d *1/54*
U.S. Cl. 83—201.15 **6 Claims**

An apparatus for cutting material into shaped articles which includes a bandsaw and a guide member, the latter being constructed so as to enclose at least a part of the band-

saw to provide a passageway therefor. The guide member may be formed into various shapes thereby causing the band-

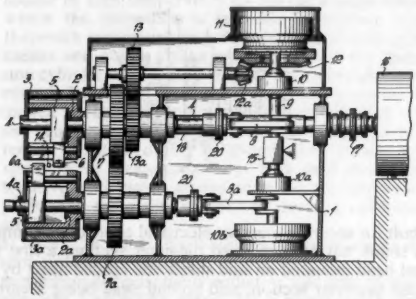


saw to be similarly shaped and to thus impart this shape to the article being cut.

3,561,311
ROTARY SHEARING DEVICE

Dieter Nowak, Duisburg, and Gerhard Steck, Rheinhausen, Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany

Filed May 9, 1969, Ser. No. 823,371
Claims priority, application Germany, June 29, 1968, 1,752,661
Int. Cl. B23d *25/12*; **B26d** *1/56, 5/08*
U.S. Cl. 83—338 **10 Claims**



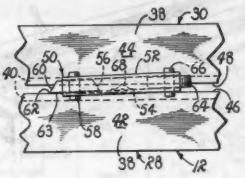
A rotary shearing device is formed by a pair of hollow shafts each containing an axially displaceable rod having a blade secured to it which is positioned within a blade drum rotatable with the hollow shaft. Normally, the blades are maintained in a rest position, however, by selectively displacing the rods the blades are moved toward each other affording a shearing action for rolled material passing between the blade drums. After each shearing operation the blades are retained in a rest position by brake means to prevent continued movement of the cutting blades.

3,561,312
PAPER RACK AND CUTTER

Lloyd V. Jones, P.O. Box 383, Riverbank, Calif. 95367

Filed June 4, 1968, Ser. No. 734,327
Int. Cl. B23d *19/02, 7/26*
U.S. Cl. 83—485 **3 Claims**

This disclosure concerns a paper cutting tool combined with a paper rack. The paper rack is constructed of horizontal and vertical members welded at their junctures into a rectangular frame. A plurality of rolls of paper are supported in the rack parallel to one side of the frame. The paper cutter is removably mounted on the rack adjacent one of the rolls of paper. A guide comprising a cutter bar and a guide bar disposed in spaced parallel relationship is provided to guide a cutter assembly. The cutter assembly has a body with a downwardly projecting tail, a circular cutting wheel rotatably mounted on the body, and a support wheel, also supported rotatably mounted on the body, in running alignment with

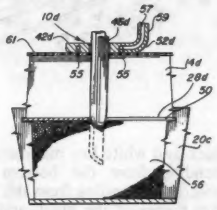


and spaced relationship to the cutter wheel. The tail of the body is located between the cutting wheel and support wheel and projects downwardly therefrom between the cutter bar and guide bar. A compression spring and washer hold the cutter assembly on the guide with the cutter wheel located between the bars and the support wheel in running engagement on the guide bar.

3,561,313
APPARATUS FOR CUTTING SHEET MATERIAL USING BED OF GRANULAR MATERIAL

Heinz Joseph Gerber, and David R. Pearl, West Hartford, Conn., assignors to Gerber Garment Technology, East Hartford, Conn.

Original application May 5, 1969, Ser. No. 821,723. Divided and this application Mar. 26, 1970, Ser. No. 022,874
Int. Cl. B26d *7/20*
U.S. Cl. 83—561 **11 Claims**



Apparatus for cutting sheet material includes a cutting table having a penetrable material supporting surface and a bed of penetrable granular material below such surface. A cutting tool extends through the penetrable surface and into the bed of granular material during at least a portion of the cutting process.

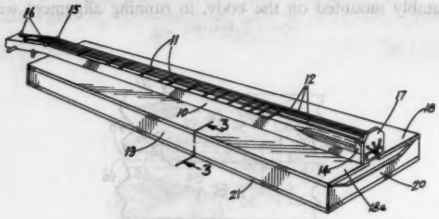
3,561,314
DULCIMER

Lendrum A. MacEachron, 1963 County Road E2, St. Paul, Minn. 55112

Filed Aug. 19, 1968, Ser. No. 753,453
Int. Cl. G10d *1/00*
U.S. Cl. 84—284 **3 Claims**

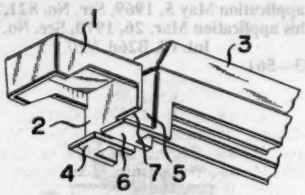
A dulcimer construction in which the side members of the sound box are trapezoidal in cross section with the narrowest

edge engaging the sounding board and the broader of the two narrow edges engaging the bottom board and with the lower



(larger) end of the sound box spaced from the sounding board altogether.

3,561,315
KEY MEMBER ASSEMBLY OF A MUSICAL INSTRUMENT
Junji Ohno, Hamamatsu-shi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan, a corporation of Japan
Filed May 19, 1969, Ser. No. 825,484
Claims priority, application Japan, May 24, 1968, Dec. 28, 1968, 43/42,361;43/114,379
Int. Cl. G10c *3/12*
U.S. Cl. 84—433 **4 Claims**

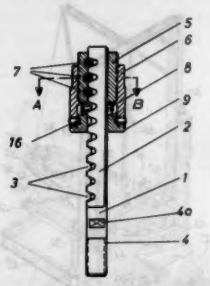


Each of the black and white key members used has a skirt downwardly extending from the bottom thereof, and a stopper piece forwardly extending from the lower end of said skirt. Both stopper pieces of the black and white key members are arranged in parallel under the white key member, so that the upper limit of movement of the key members is defined by contacting the stopper piece with a common stopper rail. The lower portion of the skirt of the white key member is partly cut off in such a manner that the stopper piece of the black key member is free from being hindered by the skirt of the white key member during the vertical movement of the latter member.

3,561,316
QUICK-TIGHTENING SCREW
Erich Karges, 6056 Heusenstamm, By Offenbach, Germany
Filed June 4, 1968, Ser. No. 734,376
Int. Cl. F16b *21/16*
U.S. Cl. 85—7 **5 Claims**

A quick-tightening screw for holding work pieces in place on a work surface having T-slots.

The invention features a tensioning rod that has a flat surface disposed at right angles to a series of semicircular grooves. A two-piece securing nut is readily movable as a unit across the flat surface and when rotated at 90° has axially spaced tangential pins that become locked within the aforesaid grooves. Final clamping is done by rotation of the

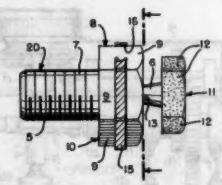


outer locking member that is threadingly engaged with the inner member of said two-piece nut.

ERRATUM

For Class 85—32 see:
Patent No. 3,561,307

3,561,317
SELF-INDICATING CLAMPING BOLT
John C. Rowell, Middlebury, Conn., assignor to Anaconda American Brass Company, a corporation of Connecticut
Filed Apr. 4, 1969, Ser. No. 813,549
Int. Cl. F16b *31/02*
U.S. Cl. 85—61 **7 Claims**



A bolt for securing together electrical connectors comprising a shank having a reduced diameter section, a first and second head mounted on said shank and spaced apart by the reduced diameter section, said second head being shearable at a predetermined torque, and a colored band carried by said first head for visually indicating the relative adjustment of said bolt.

3,561,318
ELONGATED BRAIDED ROPE AND METHOD FOR PRODUCING THE SAME
Lawrence J. Andriot, Jr., Louisville, Ky., assignor to Wellington Puritan Mills, Inc., Louisville, Ky., a corporation of Delaware
Filed May 14, 1969, Ser. No. 824,461
Int. Cl. D04c *1/12*
U.S. Cl. 87—9 **5 Claims**

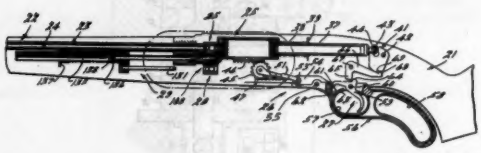
A braided rope has a number of tubular major strands each of which is formed of a number of minor strands braided

together, the major strand sections being spliced end to end, and the spliced portion itself being braided with other major strands. A method for producing a rope having an indefinite length greater than the length of any single section of a major strand, is disclosed.

3,561,319
AIR-OPERATED PROJECTILE FIRING APPARATUS

Ronald W. Joyce, Springdale, and Jules Edmond Van Langenhoven, Rogers, Ark., assignors to Victor Comptometer Corporation, Chicago, Ill.

Filed July 7, 1965, Ser. No. 469,992
Int. Cl. F41f 1/00
U.S. Cl. 89—7 22 Claims



A repeating gun for firing rounds of ammunition, said ammunition comprising a projectile having an associated propellant capable of being ignited by surface contact with high temperature air, said gun comprising:

receiver means for supporting the operational mechanism of the gun;

barrel means for guiding the projectile from the gun after ignition of the propellant;

ammunition holding means for holding a round of ammunition in a firing position in alignment with said barrel means and for receiving a round of ammunition in a loading position and for holding the round of ammunition during transfer from the loading position to the firing position;

a source of high temperature air having a temperature at which the propellant is ignitable by surface contact therewith comprising movable air compression cylinder means and piston means mounted in said air compression cylinder means and being movable therewith from an extended position after a compression stroke to a retracted cocked position ready for a compression stroke and being movable from the retracted position to the extended position during a compression stroke, piston spring drive means associated with said piston means to drive said piston means from the retracted cocked position to the extended position during a compression stroke;

sear means for releasably holding said piston means in the retracted cocked position;

trigger means for selectively actuating said sear means and releasing said piston means for a compression stroke;

breech means for connecting said air compression cylinder means to said ammunition holding means in the firing position;

a firing chamber formed by firing chamber means in said breech means adapted to surround said propellant in the firing position;

air delivery means connecting said source to said firing chamber and comprising passage means extending from said air compression cylinder means to said firing chamber;

flow control means mounted in said passage means and being movable between an open position permitting flow of high temperature air from said compression cylinder means to said firing chamber during a compression stroke and a closed position preventing flow of high pressure fluids from said firing chamber to said compression cylinder means after ignition of the propellant;

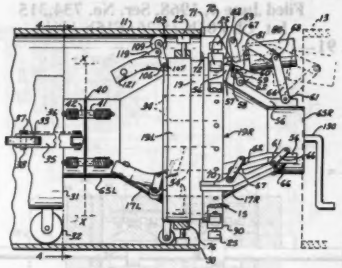
transfer means supporting said ammunition holding means and being movable between a firing position and a transfer position and between the transfer position and a loading position to move said ammunition holding means between a firing position and a loading position; and

actuator means for moving said transfer means between the firing position and the transfer position and between the transfer position and the loading position.

3,561,320
METHOD AND MEANS FOR ALIGNING TUBE CLAMPING MECHANISMS AND THE LIKE

Jerome W. Nelson and Eugene F. Sims, Houston, Tex., assignors to CRC-Crose International, Inc., a corporation of Oklahoma

Filed May 3, 1968, Ser. No. 726,358
Int. Cl. B23k 5/22
U.S. Cl. 29—493 16 Claims

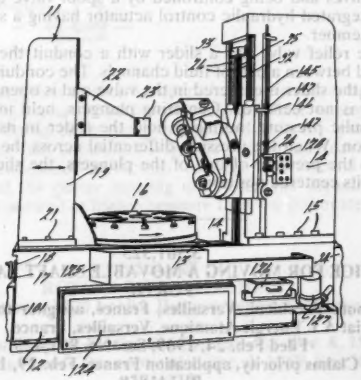


Tubular members which are to be brought together end to end are centered and aligned by first centering a clamping mechanism in one of them, next aligning the clamping mechanism with respect to the plane of the end of the tubular member, actuating the clamping mechanism, then bringing another tubular member into position and clamping it there. The invention includes a centering mechanism, aligning mechanism, positive operating means for both mechanisms, as well as clamping means. The clamping and aligning structure is equipped with propulsion means and a limited movement yieldable joint is provided between the propulsion means and the other mechanism. This permits proper alignment and centering of the whole apparatus with respect to the tubes and also with respect to the plane of their end juncture.

3,561,321
GEAR FINISHING MACHINE

Albert Belshaw, Birmingham, and Neil W. Patterson, Huntington Woods, Mich., assignors to Gearcraft, Inc., Hazel Park, Mich., a corporation of Michigan

Filed May 26, 1969, Ser. No. 827,637
Int. Cl. B23f 5/04, 5/20
U.S. Cl. 90—4 16 Claims



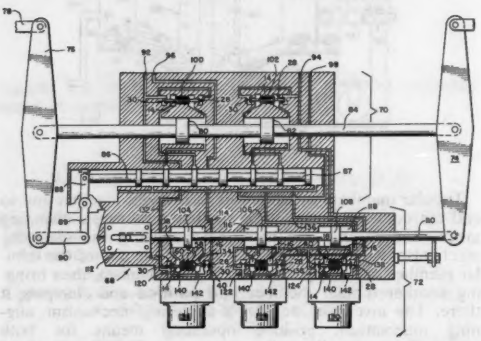
The machine has a base containing a movable bed supporting a rotatable table for the gear to be machined. A fixed stanchion on the base carries a vertically movable slide on which a swivel head is mounted having a slide for supporting a tool spindle for reciprocating movement. A fluid motor on

the swivel head slide drives a gear which drives a gear to rotate the spindle and a gear which drives a shaft for rotating the table and for moving the slide on the stanchion driven through two sets of change gears in the conventional manner.

3,561,322
STABILITY AUGMENTATION SYSTEM

Milton I. Gerstine, Ardentown, Del., and Hans G Krauss, Broomall, Pa., assignors to The Boeing Company, Seattle, Wash, a corporation of Delaware

Filed June 4, 1968, Ser. No. 734,315
Int. Cl. F01b *25/26;* **F15b** *11/16*
U.S. Cl. 91—1 **14 Claims**



A stability augmentation system is provided which has triple redundancy and is fail-functional. For each axis desired to be controlled, a hydraulic servocontrol mechanism is provided having three signal sources, and three actuator units. The actuator's pistons are connected together in tandem with a relief valve connected across each piston to prevent the piston of a failed unit from hampering the operation of the control. Means are provided to furnish a feedback signal to the servovalves controlling the pistons when pressure is being relieved across the piston to attempt to balance the output of the servovalve.

The hydraulic servocontrol mechanism may be combined with a hydraulic boost actuator comprising two tandem pistons having their pressure differential limited by boost relief valves and being controlled by a spool valve to provide an integrated hydraulic control actuator having a single output member.

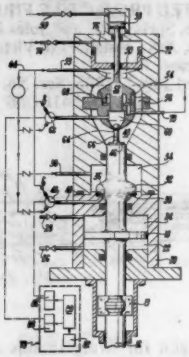
The relief valve has a slider with a conduit therein positioned between a pair of fluid channels. The conduit is closed when the slider is centered in the valve and is open when the slider is not centered. Centering plungers, held in place by hydraulic pressure, normally hold the slider in its centered position. When the pressure differential across the slider exceeds the pressure of one of the plungers, the slider moves from its centered position.

3,561,323
DEVICE FOR MOVING A MOVABLE SHAFT BACK AND FORTH

Antenore Pacchioni, Versailles, France, assignor to Commissariat A L'Energie Atomique, Versailles, France

Filed Feb. 24, 1969, Ser. No. 801,425
Claims priority, application France, Feb. 29, 1968, PV141858
Int. Cl. F15b *21/02*
U.S. Cl. 91—35 **4 Claims**

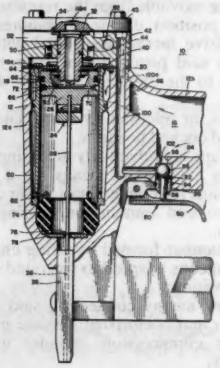
The device comprises a shaft provided with a drive piston movable in a gas chamber and acting as a "gas spring," and a valve member and an end surface. The valve member separates two stationary chambers when on its seat. Timing means are provided which successively decrease the pressure differential which acts across said valve member and urges it toward its seat, establishing against the end surface an overpressure which forces the shaft back when the movable assembly, after having reached an end position, returns under the action of the pressure difference which has undergone a reversal across the piston and which restores onto said valve member a pressure sufficient to lock said movable assembly in rest condition.



3,561,324
FASTENER DRIVING TOOL

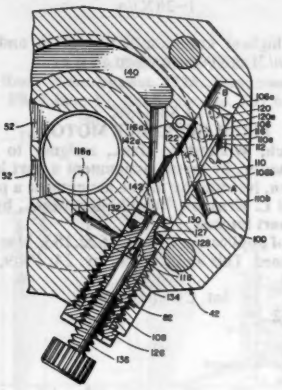
Allen R. Obergfell, Park Ridge, Ill., assignor to Fastener Corporation, Franklin Park, Ill.

Filed May 10, 1968, Ser. No. 728,128
Int. Cl. F01l *31/00, 25/06*
U.S. Cl. 91—252 **20 Claims**

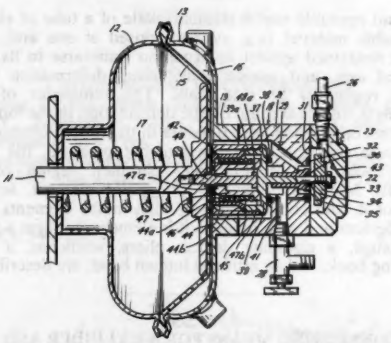


A pneumatically operated automatically cycling fastener driving tool includes a housing having a cavity defining a fluid reservoir. A cylinder is provided in the housing for slideably receiving a piston therein. A cylinder valve is provided for controlling the admission of fluid to and the exhaustion of fluid from one end of the cylinder. A suitable trigger arrangement is effective when depressed to exhaust the cylinder valve to atmosphere, and when releasd to connect the cylinder valve to the reservoir. An automatic cycling valve controls such admission to and discharge from the cylinder valve and is responsive to the pressure buildup in the

upper end of the cylinder at the end of the driving stroke to switch the cylinder valve from exhaust to the reservoir to effect closing of the cylinder valve and the return stroke of the piston.



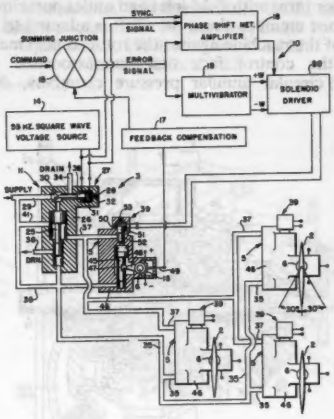
3,561,325
RECIPROCATING MOTOR
Charles P. Lamb, and William A. Dudley, Dallas County, Tex., assignors to Merla, Inc., Garland, Tex., a corporation of California
Filed Jan. 24, 1969, Ser. No. 793,686
Int. Cl. F01l *23/00, 15/14*
U.S. Cl. 91—335 **11 Claims**



This patent discloses an injection pump and a motor therefor. The pump proper is of the poppet valve type. The motor is a pneumatic diaphragm-operated motor. The control for the motor includes a pilot controlled by a pressure regulator and valves for controlling the rate of flow of fluid to and from the pilot. The pilot effects cycling of the motor by the action of mechanical relays in the pilot.

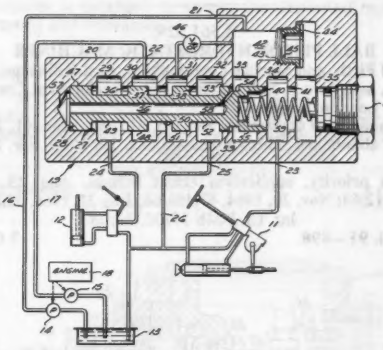
3,561,326
PULSE PHASE MODULATED SERVOACTUATOR
Ernest W. Cassaday, Santa Susana, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio, a corporation of Ohio
Filed Mar. 6, 1968, Ser. No. 710,916
Int. Cl. F15b *9/03, 9/09, 15/17*
U.S. Cl. 91—363 **21 Claims**

Pulse phase modulated servoactuator for use as in flight control of missiles and the like characterized in that the servoactuators which turn the respective missile fins to control the pitch and the yaw of the missile are under the control of



valves which are operated in or out of phase with a main control valve.

3,561,327
FLOW DIVIDER AND FLOW-DIVIDING SYSTEM
Donald A. Stremple, Strongsville, Ohio, assignor to Eaton Yale & Towne Inc., Cleveland, Ohio, a corporation of Ohio
Filed June 9, 1969, Ser. No. 831,321
Int. Cl. F15b *11/16;* **G05d** *11/00*
U.S. Cl. 91—412 **9 Claims**

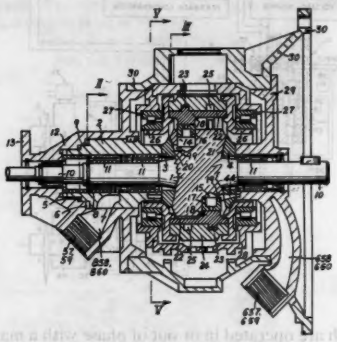


Two-pump flow divider for operating a power steering unit and a second load device on a vehicle, in which excess output from the steering pump is bypassed to a low pressure third outlet that is blocked from the second load device to prevent undesired interaction between the second load device and the power steering unit when the second load device is operated at higher pressure than the power steering unit.

3,561,328
ROTARY PISTON MACHINE
Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan
Continuation of application Ser. No. 689,108, Dec. 8, 1967, now abandoned. This application Dec. 2, 1969, Ser. No. 876,177
Claims priority, application Germany, Dec. 8, 1966, B 90,210
Int. Cl. F04b *1/10*
U.S. Cl. 91—497 **7 Claims**

In a rotary piston machine that may serve as an engine or a pump and which has a rotor containing radially disposed

cylinders and pistons which are connected by axially disposed working fluid passageways which extend through a control face, the control face passing into suitable alignment as the rotor turns with fluid inlet and outlet ports in the housing; a thrust member about the shaft is adapted to act along the axis of the machine against the rotor to help maintain the seal at the control face and has associated therewith generally circular annular pressure chambers, connecting



with the high pressure fluid in the machine and the low pressure fluid in the machine, each of which chambers having large and small portions which are eccentric to the shaft of the machine and are positioned oppositely to each other, the chambers being positioned so that the fluid contained therein exerts an axial thrust against the thrust member with a pressure that is variable and balanced to maintain the optimum sealing force on the control faces.

3,561,329

BALL PISTON HYDROSTATIC MACHINES

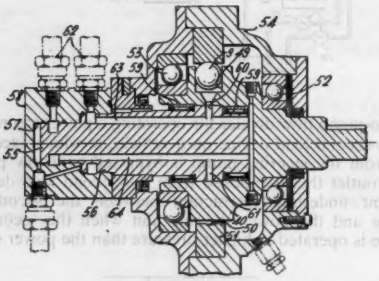
Donald Firth, and Sinclair Cunningham, East Kilbridge, Scotland, assignors to National Research Development Corporation, London, England

Continuation of application Ser. No. 711966, Mar. 11, 1968, now abandoned. This application Oct. 28, 1969, Ser. No. 871,750

Claims priority, application Great Britain, Aug. 15, 1964, 33,412/64; Nov. 20, 1964, 47,458/64; July 31, 1965, 32,862/65

Int. Cl. F04b *27/00, 27/08*

U.S. Cl. 91—498 **7 Claims**



A ball piston hydrostatic machine comprises a cylinder block in which are formed a plurality of cylinders at a constant pitch. Ball pistons working within the cylinders run on a cam track defining the stroke of each ball piston in its cylinder and having fewer complete cam lobes lying between the points of contact of the first and last balls with the cam than the total number of balls multiplied by the ball pitch. Each cam lobe is so profiled as to produce a ball stroke including a period of constant acceleration and a period of constant deceleration with or without an intermediate period of constant velocity. The duration of the latter, as a proportion of the total ball stroke, is predetermined by the number (n) of ball pistons and the number (m) of cam lobes according to the expression:

$$1-2l(X)/n$$

where l=the highest common factor of m and n, and x =an integer $\geq n/2l$ and is even when n/l is even

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3,561,330

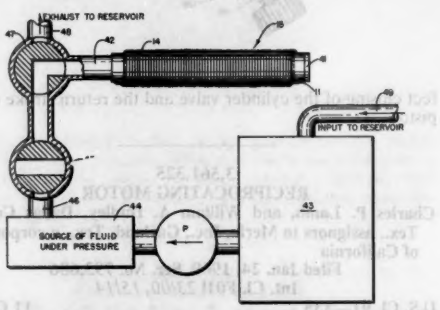
FLUID OPERABLE MOTOR

Stanley R. Rich, Worcester, Mass., assignor to Stanley R. Rich, Worchester, by mesne assignment a part interest; Alfred H. Rosen, Newton, by mesne assignment a part interest and Leonard L. Krasnow, Worchester, Mass., by mesne assignment a part interest

Continuation of application Ser. No. 622,183, Mar. 10, 1967, now abandoned. This application Nov. 24, 1969, Ser. No. 872,456

Int. Cl. F01b *19/04*

U.S. Cl. 92—92 **7 Claims**



A fluid operable motor element made of a tube of elastic deformable material (e.g. rubber) closed at one end. The tube is restrained against deformation transverse to its longitudinal axis, and against longitudinal deformation in a limited region of its side walls. The remainder of the sidewalls is free to execute elastic deformation in the longitudinal direction. When fluid pressure in the tube is changed to a pressure different from the ambient pressure, the tube flexes about the longitudinally-restrained region of its sidewalls. Methods of making the motor element, several forms of it, and combinations of such motor elements with other devices and with other motor elements to form a pressure gauge, a clamping device, pliers, wrenches, a self-wrapping hook, and an artificial human hand, are described.

3,561,331

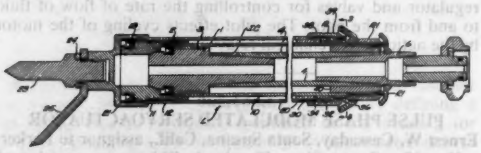
CONNECTING MEANS FOR A CYLINDER AND INTERNAL MEMBER

Jacob E. Feucht, 321 Van Demark Road, Sidney, Ohio 45365

Filed Aug. 6, 1969, Ser. No. 847,839

Int. Cl. F01b *29/00;* **F16j** *15/18;* **F21c** *11/00*

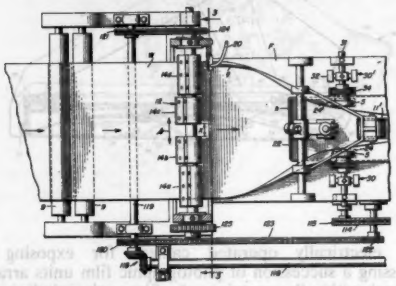
U.S. Cl. 92—128 **8 Claims**



A tapered retaining ring for locking a generally annular member within a hollow cylinder. The ring fits in and is held by a shallow groove on the internal surface of the cylinder

and the ring has an internal taper. The generally annular member to be locked within the cylinder has a complementary external taper that slides into the retaining ring and causes the latter to radially expand into locking position.

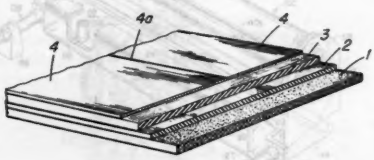
3,561,332
BAG MAKING MACHINE
Albert L. Ross, P.O. Drawer 1120, Hammond, La. 70401
Filed June 17, 1968, Ser. No. 737,640
Int. Cl. B31b *23/14*
U.S. Cl. 93—19 **46 Claims**



A machine for making notion and millinery type bags having a lip on one layer extending beyond the edge of the other layer, the machine including means for transversely perforating the paper web in successive steps in advance of and following a folding of the web into tube form, and means to repetitively rupture the tube along the perforations to form individual bag lengths.

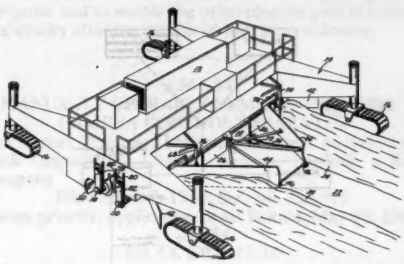
3,561,333
WITHDRAWN

3,561,334
ROOFING AND PAVING PROCESS
Anthony Gerosa, Bronx, and Walter G. Doherty, Carmel, N.Y., assignors to Metro-Pave Roof Leveler, Inc., a corporation of New York
Continuation-in-part of application Ser. No. 664,867, Aug. 31, 1967, now abandoned. This application Dec. 15, 1969, Ser. No. 885,013
Int. Cl. E04c *1/24*
U.S. Cl. 94—23 **6 Claims**



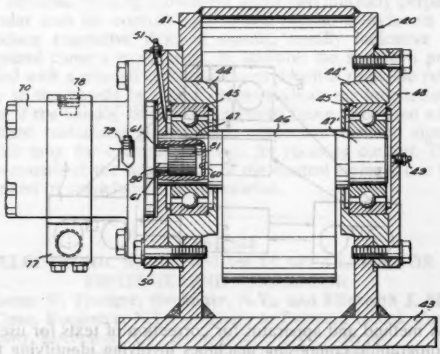
An improved paving process has been invented which employs a cold-mix asphaltic surfacing composition. This surfacing material does not require heat or mixing as a preliminary step before application on any area to be protected. The surfacing composition is very light in weight, adhesive, waterproof and has heat insulating properties being ideal for the resurfacing of any areas requiring these properties such as old worn roof decks and parking decks with areas of irregular contours in need of resurfacing. The paving material can be stored indefinitely in waterproof bags and when ready for application on a worn roof surface or parking deck this paving composition is easily spreadable and covers such worn surfaces which are irregular in depth to an even contour with a light weight, adhesive, waterproof covering.

3,561,335
APPARATUS FOR MIXING AND SPREADING ROAD BUILDING MATERIALS OR THE LIKE
Sterling H. Leatherman, San Bernardino, Calif., assignor to Telstar Engineers, Inc., San Bernardino, Calif.
Filed Oct. 2, 1969, Ser. No. 863,113
Int. Cl. E01c *19/02*
U.S. Cl. 94—40 **13 Claims**



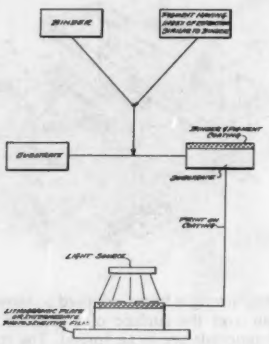
An apparatus having a frame adapted to move in a longitudinal direction over the surface of a road or the like upon which mixed materials are to be spread. The frame mounts a transversely oriented chamber which is provided with a pickup opening and a discharge opening at its opposite extremities. A mixing means in the chamber is operative to pull into the chamber materials arranged in a windrow upon the road surface. The mixing means also is operative to lift and thrust the materials transversely and inwardly through the chamber in a generally suspended state. The discharge opening permits the mixed materials to be deposited on the road surface, and a spreading means on the frame rearwardly of the chamber is arranged to spread the deposited materials transversely and outwardly.

3,561,336
HYDRAULIC VIBRATORY COMPACTOR
Bernard A. Century, Cleveland, Heights, Ohio, assignor to Allied Steel & Tractor Products, Inc., a corporation of Ohio
Filed Jan. 21, 1969, Ser. No. 792,442
Int. Cl. E01c *19/30*
U.S. Cl. 94—48 **7 Claims**



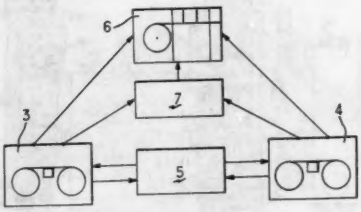
Heavy duty vehicle supported soil compacter in which an eccentrically rotated weight is directly driven through a mechanical coupling allowing backlash by a hydraulic motor, thereby permitting high ratio of eccentric weight to total sprung weight, total enclosure of all bearings without use of dust seals, and more efficient utilization of the vehicle's hydraulic system.

3,561,337
SHEET MATERIAL FOR MANUFACTURE OF TRANSPARENCIES
Jesse W. Mulkey, New Orleans, La., assignor to Kalvar Corporation, New Orleans, La., a corporation of Louisiana
Filed Aug. 15, 1966, Ser. No. 572,419
Int. Cl. G03b *41/00*
U.S. Cl. 95—1 **9 Claims**



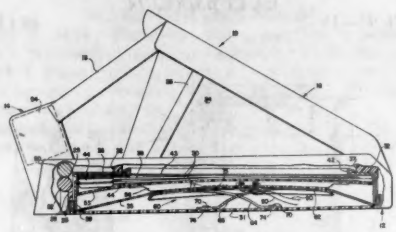
A sheet material having a transparent backing coated with a layer containing a polymeric binder and particles of solid material which is insoluble in the binder. The refractive index of the solid material varies from that of the binder by at most ±0.6. The surface of the layer is ink receptive and, by printing on that surface, a transparency is obtained.

3,561,338
PHOTOGRAPHIC COMPOSITIONS
Pierre Jean-Baptiste Astier, 72-76, rue de Crimee, Paris, 190 Seine, France
Filed Jan. 10, 1968, Ser. No. 696,929
Claims priority, application France, Jan. 12, 1967, 90912
Int. Cl. B41b *23/00*
U.S. Cl. 95—4.5 **7 Claims**



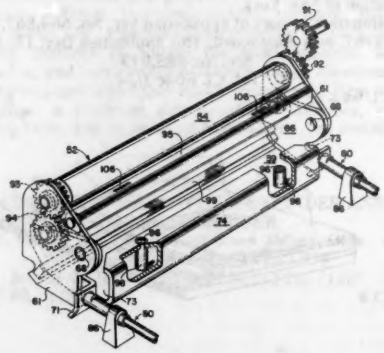
A method and apparatus for correction of texts for use in photographic composing machines involving identifying the lines of the text in clear form and on perforated tape, placing the corrected lines with identification on perforated tape, and substituting corrected lines for original lines with same identification sign through use of coincidence detector connected to both the original tape reader and the corrected tape reader. When lines are eliminated or added, a sequence counter reestablishes logical sequencing of the lines on the revised text. Identification signs can then be removed and the text, in clear form, used in photographic composing machines.

3,561,339
PHOTOGRAPHIC APPARATUS
Irving Erlichman, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass., a corporation of Delaware
Filed Dec. 19, 1968, Ser. No. 785,089
Int. Cl. G03b *17/50*
U.S. Cl. 95—13 **18 Claims**



An electrically operated camera for exposing and processing a succession of photographic film units arranged in a stack within the container of a film pack including a battery located behind the stack of film units. The camera includes biasing means for urging the forwardmost film unit into position for exposure and for urging electrical contacts into engagement with terminals on the rear of the battery.

3,561,340
REMOVABLE PROCESSING ROLLER ASSEMBLY FOR A SELF-DEVELOPING CAMERA
Irving Erlichman, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass., a corporation of Delaware
Filed Feb. 24, 1969, Ser. No. 801,428
Int. Cl. G03b *17/52*
U.S. Cl. 95—13 **15 Claims**



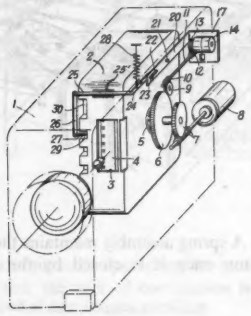
A camera including a pair of processing rollers which are easily removable from the camera for cleaning, repairs, etc. The rollers are mounted on a removable chassis, and a drive rotates the rollers so as to advance the film units between the rollers for processing. Biasing springs on reciprocating plungers on the camera body urge one roller toward the other for applying pressure to the film units while the same biasing elements also serve to retain the processing elements in operative position on the camera body.

3,561,341

PHOTOGRAPHIC OR CINEMATOGRAPHIC CAMERA

Otto Freudenschusz, Vienna, Austria, assignor to Karl Vockenhuber, Vienna, Austria, and Raimund Hauser, Vienna, Austria

Filed Jan. 26, 1968, Ser. No. 700,863
Claims priority, application Austria, Jan. 30, 1967, A878/67
Int. Cl. G03b *19/04, 1/60*
U.S. Cl. 95—31 6 Claims



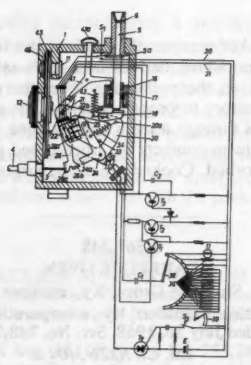
A camera adapted to be loaded by insertion of a film carrier including a film length indicator for indicating the length of unexposed film on the film carrier, the film carrier formed with a preselected conformation representing the nominal film capacity of the film, and a sensing device cooperating with the conformation on an inserted film carrier. A mask cooperates with the film length indicator and is controlled by the sensing device and is switched over by the latter in accordance with the nominal capacity of the film carrier for indicating the length of unexposed film on the inserted film carrier.

3,561,342

EXPOSURE TIME CONTROL INSTRUMENT FOR PHOTOGRAPHIC CAMERAS

Franz W. R. Starp, Calmbach, Black Forest, Germany, assignor to Prontor-Werk Alfred Gauthier G.m.b.H., Calmbach, Black Forest, Germany, a corporation of Germany

Filed Mar. 19, 1968, Ser. No. 714,186
Claims priority, application Germany, Mar. 23, 1967, P41718
Int. Cl. G03b *9/00*
U.S. Cl. 95—53 11 Claims



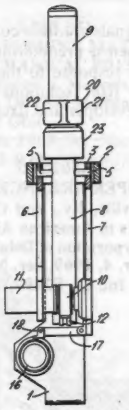
An exposure time control instrument attachable to the wire release connection of a photographic camera equipped with a "B" setting; the control instrument has a plunger for the release of the camera and an electronic timing device which can depend upon lighting conditions and can be regulated manually to obtain exposure times of different duration when the camera is set to "B". The plunger acting upon the camera is of a two-part design, one of the plunger parts being manually operable and the other of the plunger parts being cooperative with the release mechanism of the camera shutter. An electromagnetic coupling device is disposed between the two plunger parts and transfers the releasing pressure from the manually operable plunger to the other plunger part. The electromagnetic coupling device is connected to the electronic timing device for triggering by control impulse and to enable the other plunger part to return instantaneously after the release of the camera shutter.

3,561,343

MANUALLY OPERABLE DEMAND UNITS FOR CAMERA CONTROL APPARATUS

Dexter Robert Plummer, Leicester, England, assignor to The Rank Organisation Limited, London, England, a British Company

Filed May 17, 1968, Ser. No. 729,975
Claims priority, application Great Britain, May 18, 1967, 23,254
Int. Cl. G03b *17/56*
U.S. Cl. 95—86 17 Claims



A manually operable demand unit, particularly for motion picture or television camera control, has a handle arranged for universal rocking movement about two mutually perpendicular axes for controlling first and second transducers to produce respective demand signals, usually indicative of required camera movements. In addition the handle is provided with a manual control element which is rotatable relative to the handle by digital pressure about the longitudinal axis of the handle, this control element being associated with a third transducer producing a respective demand signal which may, for example, be used for zooming control. The movements of the handle and of the control element can be effected by singlehanded manipulation.

3,561,344

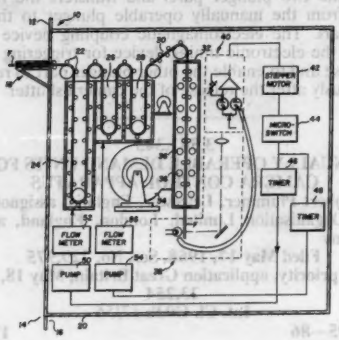
ELECTRONIC REPLENISHMENT APPARATUS FOR PHOTOGRAPHIC PROCESSOR

Thomas W. Frutiger, Rochester, N.Y., and Ellsworth J. McCune, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y., a corporation of New Jersey

Filed May 23, 1968, Ser. No. 731,488
Int. Cl. G03d *3/06*
U.S. Cl. 95—89 3 Claims

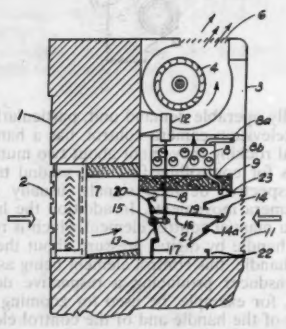
Apparatus is disclosed for processing film in which replenisher, developer and fixer solutions are supplied on demand, based on empirically determined requirements. The continuously moving fixed photographic film is light monitored to provide a plurality of modulated signals which are a function of the degree of transparency presented by the moving photographic film. The modulated signals are then fed to

an integrator to provide integrated output signals which are a function of the average of the modulated signals and time. The integrated signals are then compared in a comparator, and a comparator output signal is provided when the integrated signals equal or exceed a fixed voltage level. The



comparator output signals are then counted to provide a control output signal when a predetermined number of counts has been reached. In response to the control output signal, fresh developer and fixer solutions are then supplied to replenish the spent developer and fixer solutions.

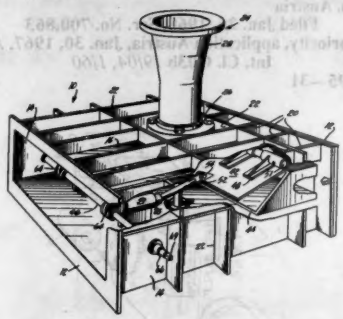
3,561,345
DAMPER ARRANGEMENT
John L. Kline, Louisville, Ky., and Curtis W. Utz, New Albany, Ind., assignors to American Air Filter Company, Inc., Louisville, Ky., a corporation of Delaware
Filed Mar. 4, 1969, Ser. No. 804,149
Int. Cl. F24f 7/06
U.S. Cl. 98—38 **8 Claims**



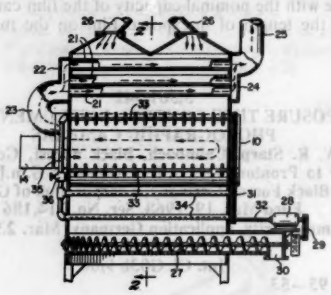
A damper arrangement including a fluid flow control damper connected to a damper operator by resilient connecting means so the damper is moved in response to movement of the operator and is moved independently of the operator by forces exerted directly upon the damper.

3,561,346
BLAST ACTUATED MODULE VALVE
John M. Stephenson, Camarillo, Calif., and Donald E. Williams, Santa Barbara, Calif., assignors to the United States of America as represented by the Secretary of the Navy
Filed Feb. 26, 1969, Ser. No. 802,525
Int. Cl. F23l 13/00
U.S. Cl. 98—119 **5 Claims**

A closure device for installation in ventilation ducts of protective structures comprising a normally open valve plate mechanically connected to a piston which is blast actuated to pivot the valve plate to a closed position thus effectively sealing the device. A spring assembly maintains the valve plate in a sealed position once it is closed by the blast actuated piston.



3,561,347
COOKER FOR GRAIN OR THE LIKE HAVING PREHEATER
Clarence E. Ellis, Red Rock, Okla. 74651
Filed May 2, 1969, Ser. No. 821,343
Int. Cl. A23l 1/10
U.S. Cl. 99—237 **6 Claims**

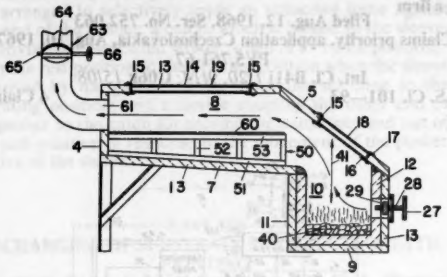


A grain cooker receives the grain at the top thereof in a preheating zone which derives heat from otherwise wasted boiler exhaust. In the preheating zone, the grain pores are opened preparatory to proper cooking. The preheated grain then gravitates through a main heating zone around a boiler where rising steam contacts the open-pored grain and is immediately absorbed. Cooked grain discharges at the bottom of the cooker.

3,561,348
BARBECUE OVEN
John E. Weir, Sr., Vine Grove, Ky., assignor to Weir Magic Pit Corporation, Frankfort, Ky., a corporation of Kentucky
Filed July 30, 1968, Ser. No. 748,726
Int. Cl. A23b 3/04
U.S. Cl. 99—259 **6 Claims**

Discloses a barbecue oven designed for unattended operation through the use of a limited air supply, a limited emission of combustion products from the unit, the placement of the meat relative to the firebox, return of meat drippings to the firebox to wet the coals and facilitate formation of smoke

within the unit. The unit is fabricated of heat retaining insulated walls and the flow of air through the unit is controlled through the use of partially open dampers in the air inlet and in the flue so that the rate of combustion is controlled to allow for unattended continuous cooking.



3,561,349

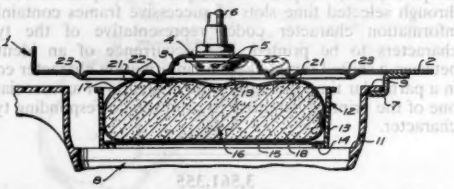
BREWING MEANS FOR PREPACKAGED COFFEE

Sam I. Endo, Sun Valley, and James H. Tarrant, Los Angeles, Calif., assignors to Farmer Bros. Co., Torrance, Calif., a corporation of California

Filed May 20, 1968, Ser. No. 730,353

Int. Cl. A47j *31/34*

U.S. Cl. 99—307 **9 Claims**



A coffee brewing means having a downwardly directed discharge spray head for hot water recessed in a surface, and a holder for prepackaged coffee for positioning the package under the spray head and underlying the surrounding surface in proximity thereto so that upon initial wetting of the coffee, the resulting expansion of the coffee presses the upper side of the package against the surface surrounding the spray head and forms a seal therewith so that the water issuing from the spray head is confined to flow through the package.

3,561,350

PACKAGE BINDING MACHINE

John Dorney and Colin Robinson, Berkshire, England, assignors to Power Industries Limited, Berkshire, England, a British company

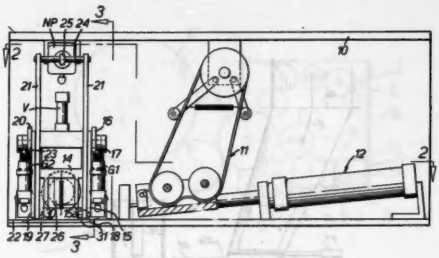
Filed Aug. 16, 1968, Ser. No. 753,241

Claims priority, application Great Britain, Aug. 16, 1967, July 18, 1968, 37689/67;34212/68

Int. Cl. B65b *13/32*

U.S. Cl. 100—29 **19 Claims**

In a package binding machine incorporating a nose plate to support overlapping ends of a loop of binding tape, during the sealing of the overlapping ends, the nose plate is movable between an operative position to provide a support for the overlapping ends of the tape during a sealing operation, and a retracted position in which it provides clearance for the ejection of the sealed joint from the machine.



3,561,351

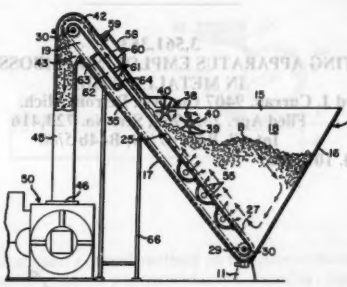
METHOD FOR FEEDING MATERIAL TO A MECHANICAL PRESS

Alfred W. French, and Forest J. Starrett, Jr., Piqua, Ohio, assignors to The French Oil Mill Machinery Company, Piqua, Ohio, a corporation of Ohio

Filed June 6, 1968, Ser. No. 734,925

Int. Cl. B30b *9/02, 12/00*

U.S. Cl. 100—37 **4 Claims**



A bed of sugar cane bagasse of substantially uniform thickness is formed on an endless conveyor and is fed into one or more mechanical presses for removing liquid from the bagasse, and the expressed liquid is filtered by directing it through the bed of bagasse supplied to the press.

3,561,352

ROTARY COMPACTOR

Jack Hirsch, 1461 Greenport Road, Far Rockaway, N.Y.

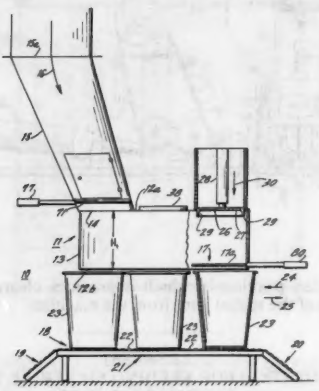
Filed Mar. 11, 1970, Ser. No. 18,542

Int. Cl. B30b *15/14, 15/30*

U.S. Cl. 100—53 **10 Claims**

A device for compacting refuse such as, for example, garbage, comprised of two rotatably mounted members each having first and second similarly shaped concave surfaces. The members are positioned within a housing having an upper inlet port and a lower outlet port wherein said ports are positioned at spaced, angular intervals. Refuse enters the housing through the inlet port, is swept up toward one of the rotating members which is held stationary by the remaining one of the rotating members until the members engage one

another at which time the swept up refuse is compacted between the opposing concave surfaces of the rotating members. At this time both members are then rotated so as to position refuse compacted between the rotating members immediately above the outlet port where they may then be ejected by gravity, or alternatively, by an auxiliary linear-type ejection means, through the lower outlet port and into a refuse container.

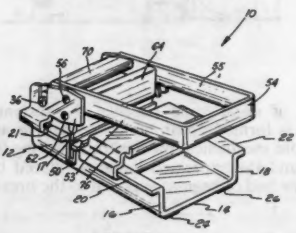


3,561,353

PRINTING APPARATUS EMPLOYING EMBOSSED TYPE IN METALLIC FOIL

Bernard J. Curran, 9407 Courvie, Detroit, Mich.

Filed Apr. 23, 1968, Ser. No. 723,416
Int. Cl. B41l *47/44;* **B44b** *5/00*
U.S. Cl. 101—65 **8 Claims**



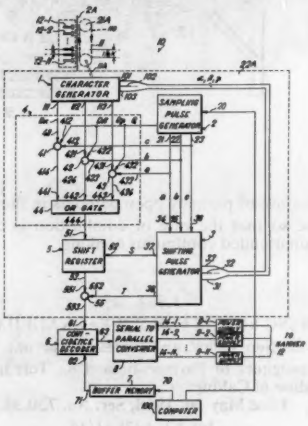
A printing apparatus for transferring an impression from a raised type printing plate such as an embossed card of the type commonly used as a credit or identification card or the like, to a piece of stock such as a match book cover, by employing a tape having a pressure removable metal coating on one face. The tape, stock and printing plate are supported between a pair of pressure bars which, when brought together, transfer the impressions of a raised or recessed type line from the printing plate to the stock. A conventional slug of type can also be employed as the source of the impression instead of the printing plate or card.

3,561,354

PRINT HAMMER SELECTION CIRCUIT IN ENDLESS BELT LINE PRINTERS

Jaroslav Mrkvicka, Prague, Czechoslovakia, assignor to Vyzkumny ustav matematickych stroju, Praha, Czechoslovakia, a firm

Filed Aug. 12, 1968, Ser. No. 752,063
Claims priority, application Czechoslovakia, Aug. 10, 1967, PV5,761-67
Int. Cl. B41j *1/20, 9/14;* **G06k** *15/08*
U.S. Cl. 101—93 **4 Claims**



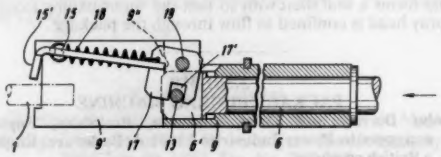
Staggered successions of reference character codes that are generated in timed relation to the periodic movement of a type-carrying belt past an aligned row of printing hammers are periodically sampled. The respective samples are routed through selected time slots of successive frames containing information character codes representative of the type characters to be printed. The occurrence of an identity between a shifted sample and the information character code in a particular time slot causes the actuation of an associated one of the printing hammers to print the corresponding type character.

3,561,355

PRINTING MEMBER SELECTOR AND DRIVE MEANS

Hans Rapparlie, and Karl Klappenecker, Constance, Germany, assignors to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm Danube, Germany

Filed Feb. 27, 1969, Ser. No. 802,857
Claims priority, application Germany, Mar. 2, 1968, P 15 74 727.0
Int. Cl. B41j *9/14*
U.S. Cl. 101—93 **7 Claims**



A printing mechanism for printing a selected symbol combination or permutation code on an item of mail or the like. The mechanism includes a number of movable printing strikers adjacently arranged in accordance with the particular geometrical configuration of the code. The strikers are mechanically biased in a rest position and are selectively driven into a printing position by a drive and selection

mechanism associated with each. According to the invention this drive and selection mechanism includes a sleeve coupled to a common "guide member" which moves between a selecting position and an operating position; an elongated pusher, movably arranged within the sleeve; an electromagnet arranged to selectively apply an attractive force against one end of the pusher; a catch, which is hinged to the sleeve, for driving the associated striker, when in a "catch position," from the rest position to the printing position when the sleeve is moved by the guide member from the selecting to the operating position; and a device coupling the other end of the pusher to the catch for moving the catch into and out of its catch position in response to the movement of the pusher relative to the sleeve.

3,561,356

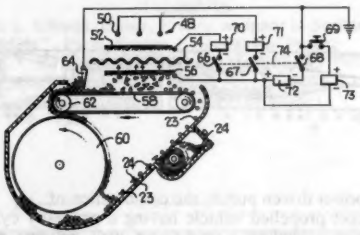
PRECHARGING OF SUBSTRATE FOR ELECTROSTATIC PRINTING

Kenneth W. Rarey, South Holland; James G. Buck, Western Springs; John B. Kennedy, Jr., Western Springs; Laszlo J. Javorik, Chicago, and Edward D. Higgins, Palos Heights, Ill., assignors to Continental Can Company, New York, N.Y., a corporation of New York

Continuation-in-part of application Ser. No. 396,060, Sept. 14, 1964, now Patent No. 3,306,193, which is a continuation-in-part of application Ser. No. 599,822, Dec. 7, 1966, which is a division of application Ser. No. 396,060, Continuation-in-part of application Ser. No. 409,213, Nov. 5, 1964, now abandoned, and a continuation-in-part of 609,275, Jan. 10, 1967, which is a continuation of application Ser. No. 409,213,. This application Feb. 24, 1967, Ser. No. 618,395

Int. Cl. B41f *15/14*

U.S. Cl. 101—129 **25 Claims**



Various methods and apparatus are disclosed for the treatment of poorly conducting substrates with ions so that the substrate is more receptive to printing material and the printing material is more adherent to the substrate prior to being fused thereon.

3,561,357

WATER TRAY ARRANGEMENT FOR THE DAMPENING UNIT OF AN OFFSET PRINTING MACHINE

Heinz Joachim Schinke, Unterkirnach, and Hermann Raible, St. Georgen, Germany, assignors to Math. Bauerle, G.m.b.H., St. Georgen, Germany

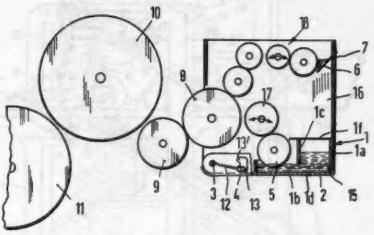
Filed Feb. 23, 1968, Ser. No. 707,624

Claims priority, application Germany, Apr. 17, 1967, B 92103

Int. Cl. B41l *25/00*

U.S. Cl. 101—148 **7 Claims**

The water tray in the dampening unit of an offset printing machine is divided by a normally upright partition into two compartments which communicate through a low aperture in the partition near the bottom wall of the tray. One compartment is upwardly sealed by a cover projecting beyond the partition to cover a portion of the other compartment which normally receives a fountain roller. The tray is releasably supported on a bracket which may be pivoted on the



machine frame to drive the dampening fluid into the covered compartment when the machine is shut down.

3,561,358

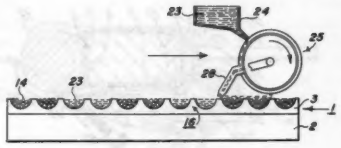
GRAVURE IMAGING SYSTEM

John W. Weigl, West Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y., a corporation of New York

Filed Oct. 10, 1966, Ser. No. 585,432

Int. Cl. B41m *1/10*

U.S. Cl. 101—170 **13 Claims**



There is disclosed a novel method in the preparation of a gravure printing plate. A photoconductive member, the surface of which is provided with a gravure pattern comprising uniformly spaced recessed areas, is electrostatically charged in such a manner that an electrostatic latent image is formed on the surface thereof. The resulting latent image is developed with electroscopic developer particles so as to selectively occlude the cells of the gravure member. The developer particles are then fixed in the cells. A printing ink is then applied to the resulting imaged member in such a manner such that the ink fills the cells void of the developer particles. Upon contact of the surface of the inked member with a copy sheet, a print of the desired image is realized. The steps may be repeated to produce the number of copies desired.

3,561,359

ROLLER ADJUSTING APPARATUS FOR A PROOF PRESS

Kenneth W. Cohen, 11258 Walnut Ridge, Chesterland, Ohio

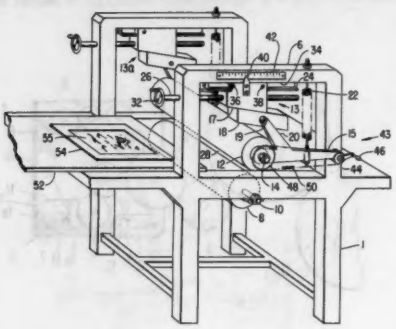
Filed Sept. 4, 1968, Ser. No. 757,425

Int. Cl. B41f *3/28*

U.S. Cl. 101—250 **6 Claims**

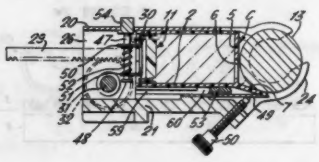
An apparatus for positioning the pressure roller of a printing machine to control the pressure exerted on a record material and an inked artist's plate on which the record material is positioned. A jackscrew horizontally displaces a

tapered block which in turn exerts a vertical force on a second tapered block. The second block is attached to the



shaft of the pressure roller and transmits the vertical force to the pressure roller.

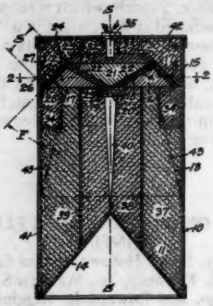
3,561,360
DISPOSABLE INK CONTAINER WITH MEANS FOR EXPELLING THE INK THEREFROM
Henry A. Branfield, Chesham, and John P. Overington, Shepperton, England, assignors to A. B. Dick Company, Niles, Ill., a corporation of Illinois
Filed Feb. 23, 1968, Ser. No. 707,636
Claims priority, application Great Britain, Feb. 28, 1967, 9550/67
Int. Cl. B41f *31/08*
U.S. Cl. 101—350 **24 Claims**



A disposable ink container arranged to be mounted in the ink fountain of a duplicating machine and having ink outlets in its wall that will lie adjacent the first inking roller of the machine, and a flexible lip on the container which is adjustable relatively to such roller to define an ink metering gap therewith. The container may incorporate its own disposable inking roller to replace the first roller of the machine. A device for mounting such container on a duplicating machine is also disclosed, provided with a spring-urged pusher for pressurizing the ink in the container to expel it on to the inking roller.

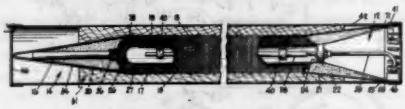
3,561,361
DETONATION SYSTEM FOR SHAPED CHARGES
Gregory J. Kessenich, Madison, Wis., and Joseph H. Church, Austin, Minn., assignors to United States of America as represented by the Secretary of the Army
Filed Apr. 18, 1950, Ser. No. 156,642
Int. Cl. F42b *1/02, 3/08*
U.S. Cl. 102—24 **4 Claims**

Claim 1. A shaped charge unit comprising a cylindrical block of solid explosive having a central axis and a cavity in its forward end symmetrical of said axis, a first annular booster coaxial of said axis and positioned about the perimeter of said block at the rearward end thereof, a second booster positioned on said axis over the rearward face of said block and in discrete relation with said first booster, means associated with said block and forming a circular chamber coaxial of said axis and rearwardly of the rear face of said block, there being first and second frustoconical channels from the perimeter of said chamber leading to said first and second boosters, respectively, the slant length of said first channel being less than the corresponding length of said



second channel, explosive composition filling said chamber and channels; and a single initiator on said axis in central detonating relation with the explosive composition in said chamber.

3,561,362
FREE PUNCH WITH ATTACHED POWER PLANT
Donald V. Black; Albert D. Jamtaas; Ross T. Radey, and John K. Wall, Charlotte, N.C., assignors, by mesne assignments, to the United States of America as represented by the Secretary of the Army
Filed May 18, 1962, Ser. No. 196,854
Int. Cl. F42b *13/28*
U.S. Cl. 102—49.3 **5 Claims**

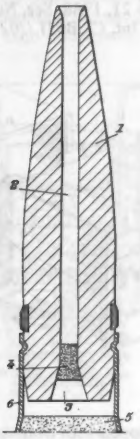


In a power driven punch, the combination of:
a rocket propelled vehicle having a generally cylindrical casing including a transverse wall defining a closed forward end and an open rearward end defining a nozzle;
a propellant charge positioned within said casing and adapted to accelerate said rocket vehicle to a velocity greater than 5,000 ft./sec.;
means within said propellant charge for igniting said charge and causing said vehicle to be propelled;
an elongated punch member having a metallic density greater than 0.5 pounds per cubic inch, and being carried by said forward end of and positioned axially coextensive with said vehicle; and
means securing said punch member in said position, said punch member having a length to diameter ratio of between eight and 15.

3,561,363
ARMOR-PIERCING AMMUNITION
Louis Birkigt, Pregny-Geneva, Switzerland, assignor to Brevets Aero-Mecaniques S. A., Geneva, Switzerland
Filed July 9, 1968, Ser. No. 743,396
Claims priority, application Luxembourg, July 13, 1967, 54,097
Int. Cl. F42b *11/14, 13/04, 15/26*
U.S. Cl. 102—52 **6 Claims**

The ammunition comprises an armour-piercing shell whose body is constituted of a material which is basically a metal that oxidizes easily and that burns by heating. An axial passage is provided, in the body of the shell thus constituted,

extending from the front end of the shell to a nozzle formed in the rear end of the shell. Ignition means are provided for causing, in the initial phase of the flight of the shell, the inflammation of the inner wall of the axial passage which, from that moment, behaves like a ramjet playing the role of an auxiliary propeller for the shell.

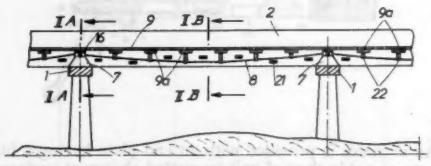


3,561,364

TRACK CONSTRUCTION FOR GROUND EFFECT MACHINES

Francois L. Giraud, Plaisir, France, assignor to Societe De L'-'Aerotrain", Paris, France, a company of France

Filed July 1, 1968, Ser. No. 741,435
Claims priority, application France, Dec. 12, 1967, 131,917
Int. Cl. B60v *1/02;* **B61b** *13/08*
U.S. Cl. 104—120 **4 Claims**



A track for an air cushion vehicle, having a structure comprising a flexible deck which has the required surfaces for supporting and guiding the vehicle and which is suspended, by means of shackles, on cables which are supported at intervals along the track, on pylons or the like.

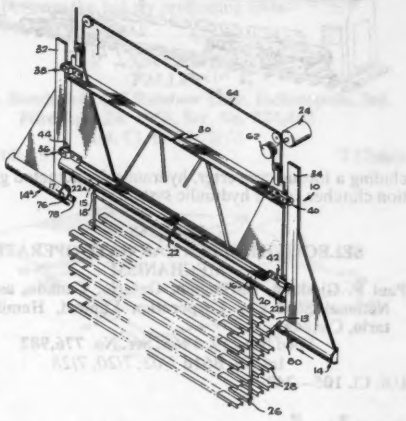
3,561,365

LIFT FOR TRACK VEHICLES

Jack Rooklyn, Northridge, Calif., assignor to Republic Corporation, Beverly Hills, Calif., a corporation of California

Filed Jan. 13, 1969, Ser. No. 790,607
Int. Cl. B61b *3/00, 13/04*
U.S. Cl. 104—127 **5 Claims**

Apparatus for use with a monorail system which guides product-supporting carriers around a plant, to raise and lower the carriers and the goods thereon at one station. The apparatus comprises a separate lift track section of the monorail which can be positioned in line with the rest of the track, a cable system for raising and lowering the track section, and stops for supporting the track section in line with the rest of the track when it is lowered.

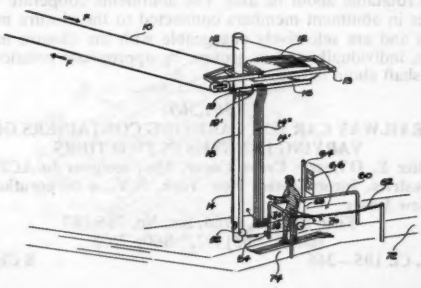


3,561,366

STARTING INSTALLATION FOR A SKI TOWING DEVICE

Jean Pomagalski, 116 avenue de l'Eygala, 38 La Tronche, France

Filed May 14, 1968, Ser. No. 729,117
Claims priority, application France, May 19, 1967, 107.134
Int. Cl. B61b *11/02*
U.S. Cl. 104—173 **7 Claims**



An installation for ensuring the departure sequence of skiers towed along a path defined by a continuously moving ski lift cable is provided with a plurality of tow bars which releasably engage with the ski lift cable to transport skiers up a ski slope. A mechanism is provided which automatically responds to the movement of a skier past a predetermined point for individually positioning the tow bars in releasable engagement with the moving ski lift cable whereby a skier can grasp the moving tow bar and be towed up the ski slope.

3,561,367

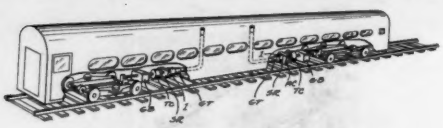
PLURAL GAS TURBINE RAILWAY CAR

James B. Black, Roscoe, Ill., and Samuel Luzaich, Santa Rosa, Calif., assignors to Twin Disc, Incorporated, Racine, Wis., a corporation of Wisconsin

Original application Feb. 14, 1967, Ser. No. 615,983, now Patent No. 3,447,397, dated June 3, 1969. Divided and this application July 16, 1968, Ser. No. 745,209
Int. Cl. B61c *5/00, 9/34;* **F16h** *47/08*
U.S. Cl. 105—61.5 **10 Claims**

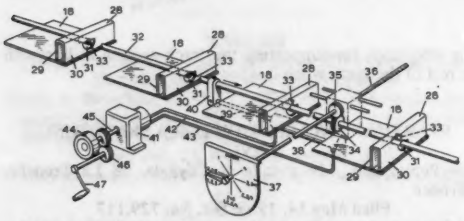
A plurality of power transmissions, each having a single

speed power source, such as a gas turbine, and each also in-



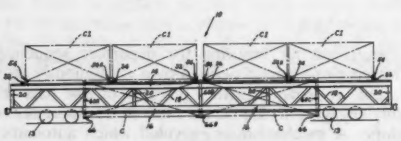
cluding a torque converter, hydraulically actuated gear selection clutches, and a hydraulic system.

3,561,368
SELECTIVE HOPPER CAR GATE OPERATING MECHANISM
Paul F. Giesking, Burlington, Ontario, Canada, assignor to National Steel Car Corporation Limited, Hamilton, Ontario, Canada
Filed Nov. 19, 1968, Ser. No. 776,982
Int. Cl. B61d *7/02, 7/20, 7/28*
U.S. Cl. 105—240 **9 Claims**



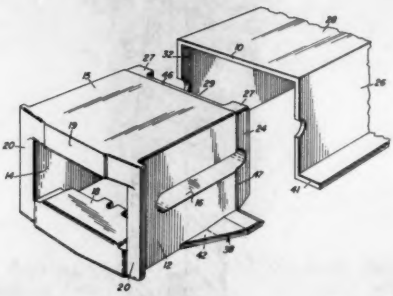
A mechanism for selectively operating a series of closure members in spaced alignment comprises a series of abutments carried on a shaft which is both longitudinally movable and rotatable about its axis. The abutments cooperate with gates in abutment members connected to the closure members and are selectively engageable with the closure members, individually and in groups, by appropriate rotation of the shaft about its axis.

3,561,369
RAILWAY CAR FOR CARRYING CONTAINERS OF VARYING LENGTHS IN TWO TIERS
Walter E. O'Leary, Creve Coeur, Mo., assignor to ACF Industries, Incorporated, New York, N.Y., a corporation of New Jersey
Filed Dec. 23, 1968, Ser. No. 786,187
Int. Cl. B65j *1/22*; **B60p** *7/08*
U.S. Cl. 105—366 **8 Claims**



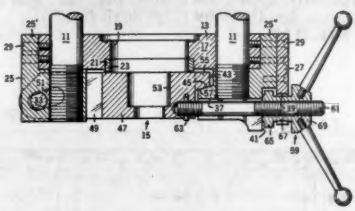
A railway car for carrying containers of various lengths in two tiers. A side structure extends along each side of the railway car each having an upper and a lower longitudinally extending chord member. A plurality of crossframe structures are suspended from the upper chord members and extend downwardly to a position below the lower chord members and are adjustably movable along the length of the upper chord member for positioning at selected intervals. Containers in the lower tier rest on the crossframe structures which may be positioned at selected intervals along the length of the car to accommodate containers of varying lengths. Corner pedestals on the upper chord members support the upper tier of containers and may be adjustably positioned along the length of the upper chord members to support containers of various lengths in the upper tier over the containers in the lower tier.

3,561,370
STRIKER AND SILL STRUCTURE
David J. Reynolds, Columbus, Ohio, assignor to The Buckeye Steel Castings Company, Columbus, Ohio
Filed June 21, 1968, Ser. No. 739,060
Int. Cl. B61f *1/02*
U.S. Cl. 105—420 **1 Claim**



A Stub Striker equipped with front draft lugs adapted to be connected to the free end of a center sill structure of a railway vehicle without any substantial overlapping of the striker and sill structure. The striker has surfaces which facilitate welding of the inner end of the striker to the free end of the sill structure by linear welding which is substantially at right angles to the draft forces.

3,561,371
EXTRUDER DOOR
Charles K. Kummer, St. Louis, Mo., assignor to Ralston Purina Company, St. Louis, Mo., a corporation of Missouri
Filed Apr. 10, 1969, Ser. No. 814,923
Int. Cl. A21c *11/16*
U.S. Cl. 107—14 **10 Claims**

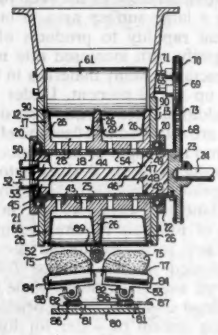


An extruder is provided with an end plate having a hinge pin on one side thereof and an angled abutment surface on the other side thereof. The extruder door is provided with a slot adapted to receive the hinge pin and an abutment surface for engagement with the angled surface of the end plate. A shaft is connected to the door and provided with means for reciprocal movement for controlling the movement of the extruder door with respect to the end plate. More particularly, when the shaft is moved in one direction, the abutment faces of the door and end plate are disengaged, permitting said door to be pivoted away from the end plate. When the shaft is moved in the opposite direction, the abutment faces of the door and end plate are brought into engagement, thereby forcing the door into fluidtight engagement with the end plate.

3,561,372
DIVIDER FOR COHESIVE MATERIALS
Clarence W. Vogt, Box 232, Westport, Conn. 06880
Filed Dec. 13, 1967, Ser. No. 690,249
Int. Cl. A21c *5/00*
U.S. Cl. 107—15 **7 Claims**

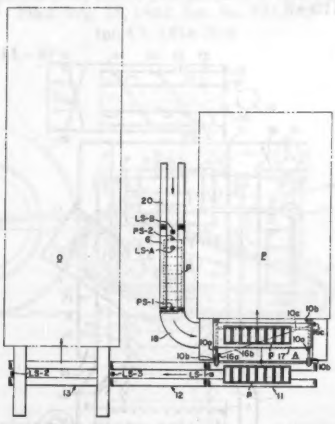
This disclosure has to do with a divider for cohesive materials, which divider includes an impeller mounted for

rotation and having a plurality of pockets which are defined by porous liners. Valving is provided for applying a vacuum to the liners at an inlet point to assure the equal filling of the pockets and similar valving serves to apply pressure to the liners to effect the discharge of the material at a discharge point. An endless belt is provided and has a run extending generally from the inlet point to the discharge point. The endless belt serves to facilitate the movement of the material into the pockets and then cooperates with the impeller to



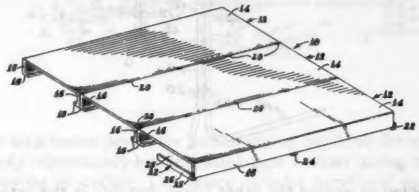
seal the pockets as they move between the inlet point and the discharge point. A conveyor belt is provided for receiving the divided units of the material which units are applied two at a time to the conveyor belt. The conveyor belt is provided with tiltable supports whereby a pair of material units may either be urged apart or together so as to facilitate the supplying of either single units or double units. A dust applicator is provided for applying a thin layer of dust to both the pockets and the conveyor belt.

3,561,373
BAKERY CONVEYOR SYSTEM
Carl Robert Sievert, Saginaw, Mich., assignor to Baker Perkins Inc., Saginaw, Mich., a corporation of New York
Filed June 6, 1969, Ser. No. 831,014
Int. Cl. A21b *1/42*
U.S. Cl. 107—57 **12 Claims**



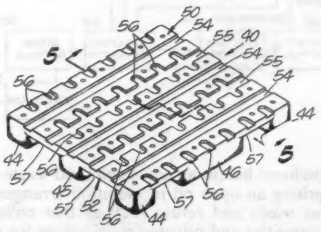
Bakery apparatus including bakery processing units for performing operations on panned products, a plurality of conveyors for conveying the pans between the units, and a pan support surface mounted between one end of one of said units and one of the conveyors for receiving the panned products. A pusher means is associated with the pan support surface which extends alongside one of the conveyors for moving the panned products between one of the conveyors and the supporting surface. Transfer apparatus is also provided for transferring the products between the supporting surface and one of the units. Drive control means is associated with each of the conveyors and the pusher means and is operative in response to the position of the panned products between the bakery processing units.

3,561,374
PALLET
Harold E. Honderich, 425 Rainbow Lane, Indianapolis, Ind.
Filed Apr. 26, 1968, Ser. No. 724,403
Int. Cl. B65d *19/18*
U.S. Cl. 108—51 **7 Claims**



A lightweight pallet formed by an assembly of channel-shaped panel members, tack-welded along their adjacent side-edges and reinforced by transverse strips adjacent the lower edge of the panel members.

3,561,375
PLASTIC PALLET
Lowell D. Hammond, San Marino, and Elmer H. Good, Claremont, Calif., assignors to Nash-Hammond, Inc., Industry, Calif., a corporation of California
Filed July 8, 1968, Ser. No. 743,106
Int. Cl. B65d *19/18*
U.S. Cl. 108—53 **13 Claims**

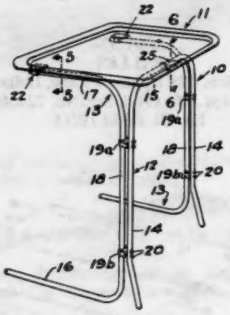


A one-piece seamless nestable hollow molded plastic pallet for use in handling cargo with forklift equipment and an inexpensive mode of molding the same utilizing dual-axis rotary molding equipment. The mold features an upper mold surface having open ended drainage, ventilating and reinforcing channels and rows of bosses formed in its lower surface spaced apart to receive forklift prongs from any lateral edge. Additional reinforcing is provided by equitably distributed tubular bosses having flaring ends integral with the upper and lower pallet walls and with their reduced midportions merging adjacent the parting plane of the mold parts.

3,561,376
FOLDING TABLE AND FOLDING TABLE ATTACHMENTS
Frederick D. Knoblock, 436 Bonnie Brier, Birmingham, Mich. 48009
Filed Mar. 18, 1968, Ser. No. 713,604
Int. Cl. A47b *3/00*
U.S. Cl. 108—124 **8 Claims**

A folding table comprising a pair of frame members which are movable between extended and folded condition and a

table top. The table top is pivoted to a cross portion of one of the frame members for swinging movement by a pivot assembly and has securing assemblies thereon which are



adapted to engage the other frame member in the extended position. The pivot assembly and the contact assemblies are adhesively secured to the underside of the table top.

3,561,377

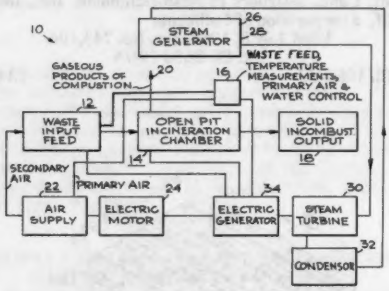
OPEN PIT VORTEX INCINERATION ARRANGEMENT

Howard R. Amundsen, Los Angeles, Calif. (6782 Homer St. Westminster Calif. 92683)

Filed May 15, 1970, Ser. No. 037,658

Int. Cl. F23g *7/00*

U.S. Cl. 110—8 **12 Claims**



There is disclosed herein an advanced solid waste disposal system comprising an open pit incineration arrangement for heterogeneous waste and refuse such as that collected by various municipalities and private organizations for disposal. In this incineration arrangement the heterogeneous refuse is fed into an open pit incineration chamber where it is transferred throughout the length thereof by an oscillating hearth. Solid materials not converted into gaseous products of combustion in this first traversal are recirculated within the open pit incineration chamber in the opposite direction by a second oscillating hearth and automatically returns to the first oscillating hearth adjacent the input to the incineration chamber. Such continuous recirculation continues until the material is substantially rendered into a state of incombustible solids. Grates or other waste removal devices are provided within the incineration chamber to allow removal of the solid incombustible materials left in the incineration chamber. Thermodynamic control is exercised to measure the flame temperature within the open pit incineration chamber. The flame temperature is controlled so that a gas producer zone is provided adjacent to the oscillating hearths, wherein the waste is, in general, burned to products of incomplete combustion. Primary air is directed into the open pit incineration chamber from regions adjacent to the top thereof to establish a vortex having an axis substantially parallel to the direction of the travel of the waste on the oscillating hearth by a plurality of individually controlled air nozzles. A plurality of thermocouples or other temperature sensing devices are also provided to monitor continuously the flame temperature in different portions of the gas producer zone and, through appropriate control means, the air flow is responsively varied to maintain the flame temperature within a predetermined temperature range. Water cooled baffles are provided adjacent the top of the gas producer zone to separate it from the furnace zone. The baffles define an orifice through which the products of incomplete combustion move, in altered and reduced laminar flow characteristics, to the furnace zone for burning to products of complete combustion. Secondary air flow (natural, forced or induced draft) may be provided through the feed mechanism so that materials having a large surface area to mass ratio may be burned with great rapidity to products of complete combustion and/or gasify with increased rate into other carbon and hydrogen reactions. Many materials in this category will contain oxygen up to 30 percent. Under the above-stated conditions, no additional temperature sensing devices or air volume controls are required to offset the effect of secondary air penetrating into the length of the producer zone. The primary air temperature sensing devices automatically reduce the quantity of primary air delivered in inverse ratio to the increased availability of secondary air, in maintaining the proper quantity of total air required to maintain set-point temperature in any zone. Additional temperature sensing devices are provided in the furnace zone. Water spray through nozzles are used as auxiliary flame temperature control and are located adjacent to the primary air nozzles to provide a dousing stream of water for lowering the flame temperature in the gas producer zone in the event that the flame temperature should suddenly rise to a value greater than the predetermined temperature range. The heat of the flame is diluted in the conversion of water to steam. The heated gases of the products of complete combustion may be utilized as the heat source in a conventional steam generator-steam turbine power plant for providing electrical energy to drive the air compressor for the primary and secondary air flows as well as the mechanical power necessary for the feed and transfer mechanisms.

3,561,378

INCINERATOR FOR TREATING BOTH LIQUID AND SOLID MATERIAL

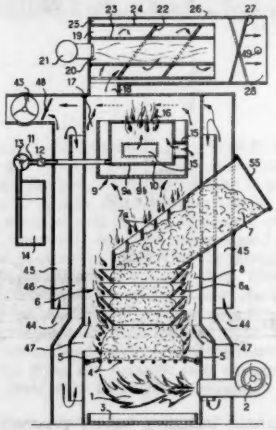
Firmin Alexandre Maurice Fabry, 9, avenue de Huy, Compiegne, Oise, France

Filed June 18, 1969, Ser. No. 834,296

Claims priority, application France, June 21, 1968, 156,546

Int. Cl. F23g *5/12*

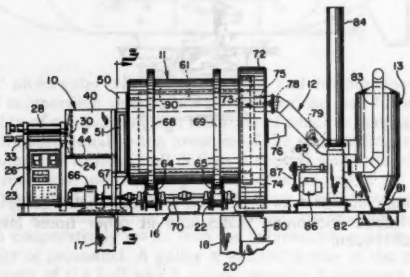
U.S. Cl. 110—8 **18 Claims**



An incinerator comprising a grating, a burner and ash receiver beneath the grating, means above the grating for peripherally restraining garbage therein while admitting hot gases to the periphery of said garbage, and means for treating the gases evolved in the incinerator to precipitate out noxious components. The incinerator may comprise a boiler for

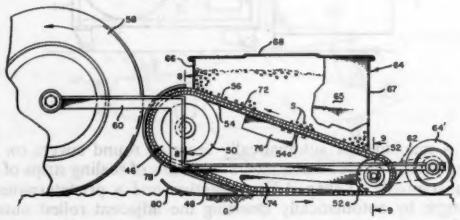
evaporating liquids, special means facilitating the removal of cinders, and means for supplying the incinerator without permitting the escape of noxious gases while this is being done.

3,561,379
SOLID WASTE INCINERATOR AND METHOD
Edwin M. Polsak, South Euclid, Ohio, assignor to Bartlett-Snow, a Division of Bangor Punta Operations, Inc., Bangor, Maine, a corporation of New York
Filed Feb. 19, 1969, Ser. No. 800,510
Int. Cl. F23g *5/06*
U.S. Cl. 110—14 **28 Claims**



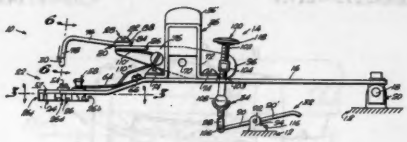
A self-contained solid waste incineration system using a rotating cylinder having interior projections in its refractory lining to promote tumbling, such cylinder having a length to I.D. ratio of from about 1:1 to about 2:1; the system incorporating a time controlled plunger feeder utilizing a hinged door forming a part of the hopper to preclude spillage.

3,561,380
SEED PLANTER
William J. Adams, Jr., San Jose, Calif., assignor to FMC Corporation, San Jose, Calif., a corporation of Delaware
Filed Aug. 28, 1968, Ser. No. 755,853
Int. Cl. A01c *7/18*
U.S. Cl. 111—89 **5 Claims**



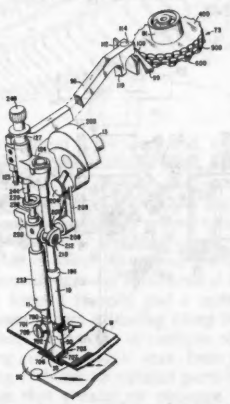
A seed planter for placing seed units, i.e., a single seed or a multiple seed packet, into the ground individually at zero ground speed, and at precise spacing and to desired depth. The planter includes a conveyor with pockets, each pocket to receive a single seed unit as the belt passes by a hopper. The seed depositing portion of the conveyor is in rolling or crawling ground engagement and a pusher assembly comprising a wheel or another belt moves along with the seed depositing portion so that a series of protuberances on the pusher assembly enter into the pockets to force the seeds into the ground.

3,561,381
SEWING MACHINE BUTTON HOLDING MECHANISM
Martin Weiss, 2100 S.W. 20 St., Miami, Fla. 33145
Filed Jan. 28, 1970, Ser. No. 6,359
Int. Cl. D05b *3/00, 3/16*
U.S. Cl. 112—114 **9 Claims**



An attachment device for button sewing machines for temporarily repetitiously holding shank type buttons during button sewing procedure. The device includes turrethead structure including a selectively positionable turret wheel having a circular plurality of button seats for stationarily seating a variety of styles and sizes of shank type buttons—a particular button shank seat being adapted to be turned or indexed in register with thrust arm means repetitiously operative for selectively holding or releasing buttons from a selected one of the button seats.

3,561,382
UNIVERSAL WORK FEEDING MECHANISMS FOR SEWING MACHINES
Stanley J. Ketterer, Morris Plains, and William J. Edwards, Denville, N.J., assignors to The Singer Company, New York, N.Y., a corporation of New Jersey
Filed Sept. 29, 1969, Ser. No. 861,575
Int. Cl. D05b *27/20, 3/02*
U.S. Cl. 112—213 **5 Claims**

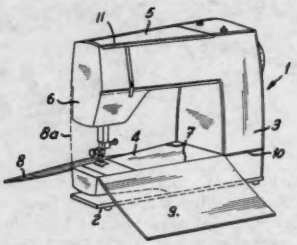


A universal work feeding mechanism for a zigzag sewing machine whereby the needle jogging mechanism may be converted conveniently into a work feeding mechanism for transporting the work fabric laterally of the usual direction of feed of the work through the machine. By means of a novel pattern cam for the needle jogging mechanism of the sewing machine lateral work feeding may be accomplished, and a special sewing machine presser foot facilitates feeding of the work fabric not only in the conventional direction, but also transversely thereof.

3,561,383
SEWING MACHINE

Marcel Fresard, Petit-Lancy, Geneva, Switzerland, assignor to Mefina S. A., Fribourg, Switzerland, a company of Switzerland

Filed Mar. 11, 1969, Ser. No. 806,067
Claims priority, application Switzerland, Apr. 11, 1968, 5,502/68
Int. Cl. D05b *75/00*
U.S. Cl. 112—217.1 4 Claims

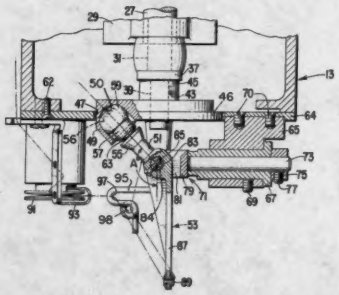


A sewing machine has two flaps hinged on respective sides of the free lower arm of the machine so that when the flaps are raised, they enclose the head of the machine and when they are lowered, they expose the head for use. The hinge means of each flap is slidable in a related groove extending along the upper face of the lower arm and into the pedestal so that each of the flaps can be slid away from the end of the free lower arm to permit tubular pieces of material to be slipped over said arm and have a sewing operation performed thereon.

3,561,384
NEEDLE THREAD TAKEUP MECHANISMS FOR SEWING MACHINES

Ralph E. Johnson, Boonton, N.J., assignor to The Singer Company, New York, N.Y., a corporation of New Jersey

Filed Sept. 10, 1969, Ser. No. 856,722
Int. Cl. D05b *49/00*
U.S. Cl. 112—248 8 Claims



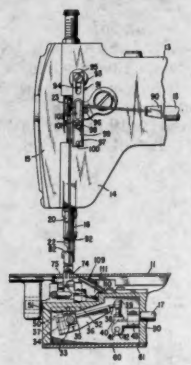
A needle thread takeup for a sewing machine comprising mechanism for imparting motion to the thread eyelet extremity of a takeup lever in a nonplanar closed loop path.

3,561,385
THREAD CONTROLLING MECHANISMS FOR SEWING MACHINES

Ralph E. Johnson, Boonton, N.J., assignor to The Singer Company, New York, N.Y., a corporation of New Jersey

Filed Oct. 7, 1969, Ser. No. 864,349
Int. Cl. D05b *49/00*
U.S. Cl. 112—247 9 Claims

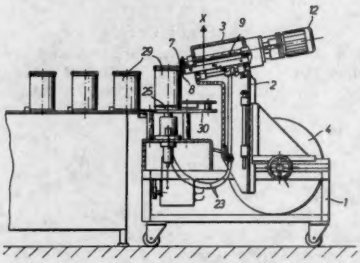
Thread controlling devices for the needle thread and looper thread of a two thread chainstitch sewing machine in which a thread takeup element is arranged to move in a path closely adjacent to the opposed edges of a pair of thread frictioning plates to draw the thread at times lengthwise between the thread frictioning plates and at other times laterally therebetween.



3,561,386
CONTAINER SEALING MACHINE

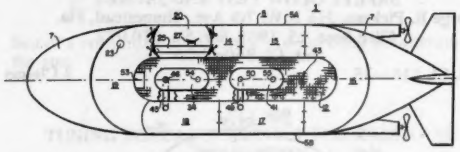
Otto Meister, Oehringen, Germany, assignor to Karl Huber Verpackungswerke, Oehringen, Germany

Filed Mar. 4, 1969, Ser. No. 804,112
Claims priority, application Austria, Mar. 5, 1968, A2,124/68
Int. Cl. B21d *19/00*
U.S. Cl. 113—30 11 Claims



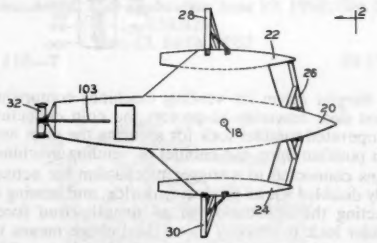
A machine for automatically securing round covers on a succession of round containers by means of sealing strips of a substantially U-shaped cross section and a predetermined length by automatically inserting the adjacent rolled outer edges of a container and cover between two sealing rollers which are rotating in opposite directions to each other, and by then automatically inserting the two webs of a sealing strip between the sealing rollers and the rolled edges while the container with its cover is turned for at least one complete revolution about a vertical axis. The automatic insertion of the rolled edges of the container and cover between the sealing rollers is attained by suitable means for retracting the lower sealing roller in the axial and vertical directions from its sealing position underneath the upper sealing roller so as to permit the container and cover to be lifted in a vertical direction until the rolled edges have passed the lower sealing roller, and for then moving the lower sealing roller forwardly and pressing it upwardly against the rolled upper edge of the container.

3,561,387
UNDERWATER SUPPORT VESSEL
William H. Kumm, Severna Park, Md., and Harley A. Smith, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa., a corporation of Pennsylvania
Filed Feb. 3, 1969, Ser. No. 795,860
Int. Cl. B63g 8/00
U.S. Cl. 114—16 12 Claims



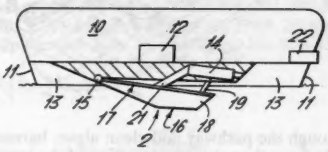
An underwater vessel for docking and maintenance of small submersible vehicles includes a toroidal hull having a plurality of compartments at least one of which is maintained at a pressure equal to the pressure of the surrounding water medium. The toroidal hull defines a central well area which includes one or more landing areas for the landing of the submersible vehicles. A passageway connects a compartment of the hull with the landing area and includes a mating means which cooperatively mates with the submersible vehicles for transfer of personnel. A galley is located in one of the compartments of the hull which compartment is maintained at a pressure of one atmosphere and the food may be transferred to the personnel in the ambient atmosphere compartment by means of a food lock. A manned passage is provided through a decompression chamber which allows personnel to transfer from the ambient pressure compartment to the one atmosphere compartment after proper decompression in the decompression chamber. Divers may exit from the ambient pressure compartment and work on the landed submersible vehicle in a dry gas atmosphere such as air by the provision of an inflatable bubble housing enclosing the landing area and having a pressure therein equal to the ambient pressure of the surrounding water medium.

3,561,388
HYDROFOIL SALING CRAFT
David A. Keiper, P.O. Box 71 (Marin Co.), Sausalito, Calif.
Filed May 7, 1969, Ser. No. 822,578
Int. Cl. B63b 1/28
U.S. Cl. 114—66.5 8 Claims



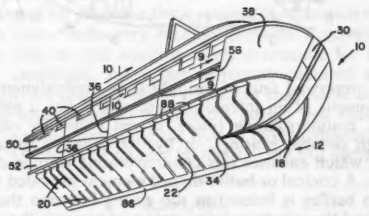
A hydrofoil trimaran, adapted to be supported wholly by hydrofoils with sail propulsion means, comprising a bow hydrofoil truss structure having a symmetrically disposed dihedral foil element with oppositely inclined lifting surfaces pivotally mounted upon the opposite sides of the central hull and the pontoon hulls above the normal waterline of said hulls on a substantially common pivotal axis with means for securing the truss structure in a generally vertical plane with lifting surfaces inclined to provide a positive angle of attack and positive lift, lateral hydrofoil units applied to each of the pontoon hulls, having lifting foils inclined outwardly and upwardly, and laterally of the center of thrust of the sail propulsion means and a stern foil unit lifting foils, adapted to act as a rudder, and means for retracting all hydrofoils for normal sailing.

3,561,389
GAS-CUSHION VEHICLES
Rowland D. Hunt, Fareham, England, assignor to Vosper Limited
Filed Dec. 31, 1968, Ser. No. 788,231
Claims priority, application Great Britain, Jan. 11, 1968, 1609/68
Int. Cl. B63b 1/22
U.S. Cl. 114—66.5 11 Claims



A planing surface provided with a water inlet for the vehicle's water reaction propulsion means forms part of a member located within the gas-cushion space of the vehicle which member is displaced upwardly against the action of resilient means and has a downwardly protruding keel portion to prevent the planing surface from grounding when the vehicle is operating on land or in very shallow water. Auxiliary propulsion means are provided for use when said water reaction propulsion means is inoperative.

3,561,390
HYDROPLANE BOAT HULL
Milton A. Wallace, 11 Colonial Ave., Cleveland, Ohio 44110
Filed Apr. 21, 1969, Ser. No. 817,688
Int. Cl. B63b 1/38
U.S. Cl. 114—67 10 Claims

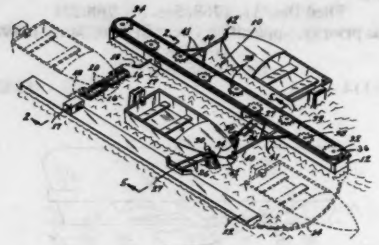


The invention disclosed is an improved, hydroplane boat hull comprising a watertight interior skin, extending above the water line of the boat, an exterior skin having openings to the atmosphere for induction of air, and air ports beneath the water line for egress of air under pressure to lift the boat when the boat is propelled at a planing speed. The hull itself is formed with a pair of lower, elongated convex keels, each having a runner therealong, a forward, central boat keel having an air tunnel formed therein, and a central, generally rectangular air pressure duct extending along the terminus of the forward boat keel to the rear or transom of the hull, and being of decreasing cross-sectional area, from stem to stern, and communicating with the air exhaust ports in the exterior skin of the hull so that greater air pressure is maintained towards the transom of the boat than at the bow of the boat so as to lift the transom when the boat is at a planing speed. The transom may include a cavitation plate, and the hull itself is constructed of modular, precast units.

3,561,391
BOAT WASHING APPARATUS AND METHOD
Norman C. Locati, 1714 Meadow Drive, Lake Oswego, Oreg. 97034
Filed Mar. 3, 1969, Ser. No. 803,654
Int. Cl. B63b 59/00
U.S. Cl. 114—222 7 Claims

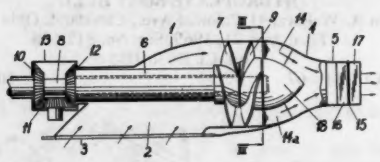
Two parallel elongated floating support means define a pathway for a boat. Powered brushing members are carried by double jointed arms that are anchored to the floating sup-

port means. Said powered brushing members are spring biased to conform to the various shapes of boats that are



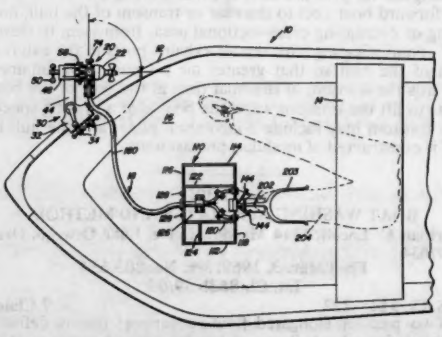
passed through the pathway and clean algae, barnacle spores and the like from the submerged portion of the boats.

3,561,392
UNIT OF PROPULSION BY HYDRODYNAMIC REACTION
Guillermo Federico Baez, 759 Jujuy St., Buenos Aires, Argentina
Filed Oct. 21, 1968, Ser. No. 769,289
Claims priority, application Argentina, Oct. 23, 1967, 210,440
Int. Cl. B63h *11/10*
U.S. Cl. 115—12 **1 Claim**



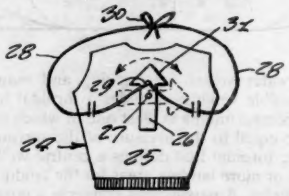
The improved unit of propulsion by hydrodynamic reaction consists of an integral turbine which has a pair of adjacent, counterrotating rotors, driven either by one motor through suitable gearings, or by two separate motors. The casing which encloses this counterrotating turbine ends in a nozzle. A conical or bullet shaped element provided with one or two baffles is housed in the casing between the second rotor and the nozzle and directs the jet towards the said nozzle which has movable sidewalls for regulating the outlet.

3,561,393
CONTROL SYSTEM FOR TROLLING MOTOR
Warren D. Fortson, Sturgis, Miss. (115 Reed Ave. Louisville, Miss. 39339)
Filed Oct. 30, 1968, Ser. No. 771,766
Int. Cl. B63h *21/26*
U.S. Cl. 115—18 **10 Claims**



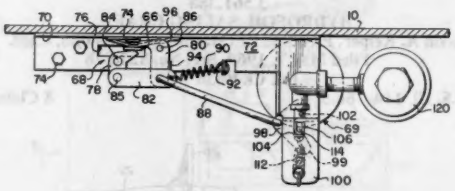
An electric outboard motor assembly and storage housing therefor. The storage housing encloses a source of electrical potential for the outboard motor, a steering control assembly and a voltage control assembly for the motor. The housing may be positioned remotely relative to the motor and the steering and voltage control assemblies may be removably supported on the exterior of the housing and operated from adjacent the latter by control portions thereof movably supported from the housing.

3,561,394
SAFETY GLOW VEST AND JACKET
George R. Pickens, 316 N.W. 7th Ave., Homestead, Fla.
Filed Sept. 25, 1967, Ser. No. 670,072
Int. Cl. B60q *1/26*
U.S. Cl. 116—35 **3 Claims**



A garment for riders of motor cycles, bicycles or motor scooters, the garment having a material that will glow when the headlights of an automotive vehicle shine toward it, thus giving the motorist a visibly clear indication of the presence of the cyclist ahead so to prevent colliding into him.

3,561,395
BURGLAR ALARM FOR VENDING MACHINE
Edwin John Piersma, Grand Rapids, and Lloyd David Herring, Jenison, Mich., assignors to Rowe International, Inc., Whippany, N.J., a corporation of Delaware
Filed Dec. 12, 1968, Ser. No. 783,352
Int. Cl. G08b *13/08*
U.S. Cl. 116—86 **9 Claims**

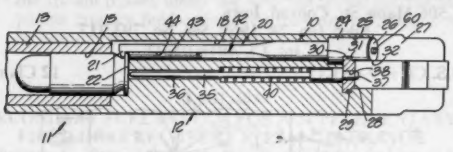


A burglar alarm for vending machines comprising a reinforced door assembly to protect the coin collection box, a key operated tumbler lock for securing the door assembly in flush position upon the cabinet of vending machine, linkage means connected to a trigger mechanism for actuating normally disabled sound producing device, and sensing levers for detecting the application of an unauthorized force to the tumbler lock to thereby move the linkage means to release trigger and actuate the sound producing device. After sound producing device has been actuated to alert persons in the vicinity of the machine that a burglary attempt is being made, authorized personnel can open the vending machine cabinet and manually reset the spring-loaded trigger to thereby disable sound producing device.

3,561,396
COMBINED SHELL EXTRACTOR AND INDICATOR ASSEMBLY
Arthur E. Luciani, 6744 Mulholland Drive, Hollywood, Calif.
Filed Dec. 22, 1969, Ser. No. 887,107
Int. Cl. G01d *21/00*
U.S. Cl. 116—114 **7 Claims**

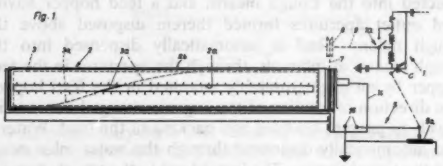
A combined shell extractor and indicator assembly for a gun providing both visual and tactile indication of the

presence of a shell in the gun chamber. The indicator is built into and carried by the extractor and is designed for use in



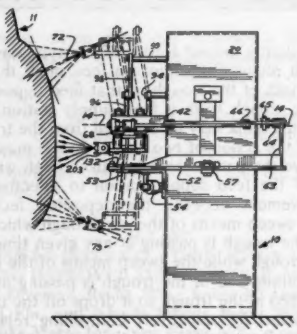
lieu of a conventional extractor without need for alteration in the gun.

3,561,397
TUNING INDICATING DEVICE FOR RADIO AND TELEVISION
Wilhelm Bertram, Hans-Cornelius Strasse 125, 8032, Grafelfing, Germany
Filed Sept. 5, 1967, Ser. No. 665,517
Claims priority, application Germany, Sept. 8, 1966, B88829
Int. Cl. H03j *1/02*; G01d *13/10*
U.S. Cl. 116—124.4 7 Claims



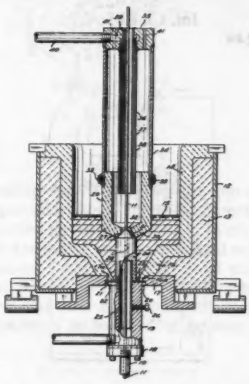
A device to indicate wavelengths or channels in radio or television apparatus, including a rotary indicating cylinder having a spiral indicating line thereon. The indicating cylinder is driven by means electrically connected to the tuning means of the apparatus. A scale cylinder is outwardly of, and coaxial with, the indicating cylinder. It has a plurality of scales thereon and is selectably driven by the channels or wave band selector for movement past a fixed housing window.

3,561,398
SPRAY PAINTER
Glenn R. Rose, St. Paul, and Robert S. Hedin, Minneapolis, Minn., assignors to Programmed & Remote Systems Corporation, St. Paul, Minn., a corporation of Minnesota
Continuation of application Ser. No. 561,882, June 30, 1966, now abandoned. This application June 19, 1969, Ser. No. 838,020
Int. Cl. B05b *13/02*
U.S. Cl. 118—7 20 Claims



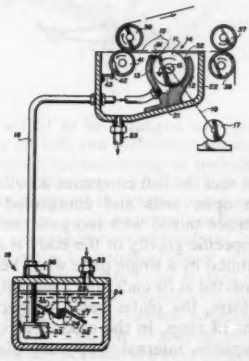
A spray painting device comprising a spray gun mounted onto the end of the arm and including parallel linkage which will hold the spray gun in a predetermined relationship throughout the working stroke of the gun. The spray gun is also mounted so that it can be tipped up or tipped down in order to keep it substantially perpendicular to the surface being sprayed when the surface curves. A programming device is used for controlling the spray gun so that the spray painting is done only in preselected areas of each of the arm strokes.

3,561,399
METAL COATING APPARATUS
Alfred P. Federman, Chesterland, Ohio, assignor to Homer W. Giles, University Heights, Ohio, a part interest
Original application July 2, 1964, Ser. No. 379,965, now Patent No. 3,468,695, dated Sept. 23, 1969. Divided and this application June 26, 1969, Ser. No. 836,832
Int. Cl. B05c *11/00*
U.S. Cl. 118—65 1 Claim



Apparatus for casting a thick coating of aluminum on steel wire. A lower refractory member presents a vertical wire passage with an exit opening inside a crucible for holding molten aluminum. An upper refractory member extends down into the crucible and is releasably engageable sealingly with the lower member around the latter's exit opening to provide a valve controlling the flow of molten aluminum into contact with the wire passing up through the exit opening.

3,561,400
DEVELOPER APPARATUS
Louis A. Smitzer, and Byung Sik Hong, San Diego, Calif., assignors to Stromberg Datagraphix, Inc., a corporation of Delaware
Filed July 23, 1968, Ser. No. 746,839
Int. Cl. B05b *5/02*
U.S. Cl. 118—637 10 Claims



Apparatus is described for developing a latent image on a sheet. Toner is deposited on the sheet by passing the sheet

over a projecting portion of a cylindrical roller in contact with a film of fluid established by rotating the roller. The fluid has toner entrained therein and is supplied to the roller by a pump via a space between the roller and a shroud, which surrounds the roller except for an opening through which the projecting portion of the roller extends. Wiper means both remove residual material from the roller and prevent the removed material from returning to said space.

3,561,401

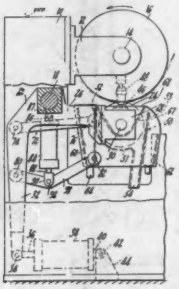
COATER APPLICATOR ASSEMBLY

Frank P. Ford, Liverpool, N.Y., and Burton D. Bjorn, Morningdale, Mass., assignors to Rice Barton Corporation, Worcester, Mass., a corporation of Massachusetts

Continuation of application Ser. No. 307,187, Sept. 6, 1963, now abandoned. This application Apr. 28, 1969, Ser. No. 819,622

Int. Cl. B05c *1/12*

U.S. Cl. 118—249 **6 Claims**



A roller coating apparatus having a backing roll and wherein there are separately shiftable supports for the applicator roller and for its pan so that the pan may be lowered and tilted to a dump position.

3,561,402

ARTIFICIAL REFUGE REEF FOR FISH

Shinichi Ishida, Tokyo; Takatsugu Kawano, Saitama-ken, and Chiaki Sato, Asaka-shi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, a corporation of Japan

Filed Nov. 20, 1968, Ser. No. 777,433

Claims priority, application Japan, Nov. 25, 1967, July 13, 1968, 42/98663;43/59398

Int. Cl. A01k *61/00*

U.S. Cl. 119—3 **10 Claims**

An artificial reef for fish comprises a hollow tubular body with opposite open ends and constituted of a synthetic resinous substance mixed with inorganic substances so that the apparent specific gravity of the body is at least 1.1. The body is constituted by a single plate when bent to cylindrical form and connected at its ends, and a plurality of plates when of prismatic form, the plates being connected at adjacent ends by means of rings. In the case of a rectangular prism which is collapsible, internal supporting plates are used to hold the tubular body in operative state, the supporting plates being of starlike shape with apex portions engaged in cooperating openings in each of the plates.

3,561,403

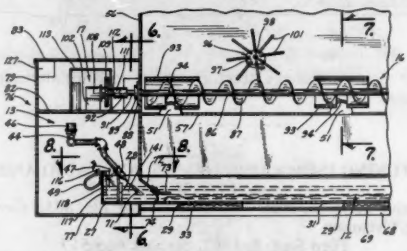
AUTOMATIC LIQUID FEEDING APPARATUS

Clifford D. Wilson, Jr., 406 S. Main, and Leland G. Wiseman, 506 Maple St., Conrad, Iowa

Filed Jan. 24, 1969, Ser. No. 793,717

Int. Cl. A01k *05/02*

U.S. Cl. 119—51.11 **12 Claims**



This invention relates to an automatic liquid feeding apparatus comprising a trough means; a water inlet means directed into the trough means; and a feed hopper having feed outlet apertures formed therein disposed above the trough means. Feed is automatically dispensed into the trough means, at intervals, through the apertures in the feed hopper by an auger rotatably mounted in the feed hopper. The direction of rotation of the auger is changed between intervals to prevent bridging and packing of the feed. Water is also automatically dispensed through the water inlet means into the trough means. The liquid level in the trough means is controlled by a liquid level sensing means.

3,561,404

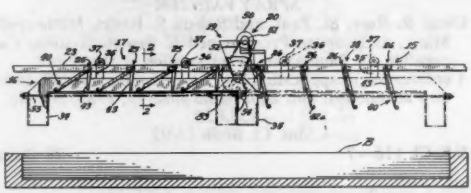
SWEEP SHUTTLE ANIMAL FEEDER

Robert G. Ferris, Harvard, Ill., and Allen K. Gillette, Belvidere, Ill., assignors to Starline Inc., a corporation of Delaware

Filed June 3, 1969, Ser. No. 829,933

Int. Cl. A01k *05/02*

U.S. Cl. 119—56 **11 Claims**



A sweep shuttle animal feeder of the type having a feed trough which reciprocates above a feed bunk that is about twice the length of the trough so that feed deposited in the reciprocating trough from a feed supply station above the midpoint of the bunk may be dropped from the trough along the bunk by the action of two sets of sweep means that are pivoted above the path of travel of the trough with a set on each side of the feed supply station to selectively control relative movement between the deposited feed and the trough. The sweep means of the set through which the leading end of the trough is passing at any given time pass over feed in the trough while the sweep means of the set through which the trailing end of the trough is passing at any given time arrest feed in the trough so it drops off the trailing end. Improved means for selectively controlling relative movement between deposited feed and the trough includes:

1. Sweep means in which a solid sweep panel occupies an angle of about 30° to 35° with respect to the trough floor as it is arresting deposited feed;
2. Sweep means which includes both a solid sweep panel for arresting the movement of free flowing material and associated sweep tine means for arresting the move-

ment of dense material which the panel may not penetrate; and

3. Means for elevating selected sweep panels of each set as the trough passes under the selected panels so that the panels contact feed only when they are arresting it to be dropped off the trailing end of the trough.

3,561,405

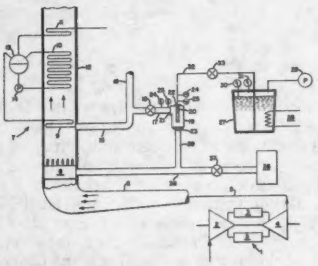
SECONDARY FUEL SYSTEM FOR A SUPPLEMENTARY FIRED HEAT RECOVERY STEAM GENERATOR

Salvatore S. Tramuta, North Windham, Maine, assignor to General Electric Company, a corporation of New York

Filed Feb. 4, 1969, Ser. No. 799,186

Int. Cl. F22b *1/18*

U.S. Cl. 122—7 **2 Claims**



A supplementary-fired heat recovery steam generator having a secondary source of liquid fuel and where superheated steam from the steam generator, or an external source, is used to vaporize the liquid fuel which has been atomized in a vaporization chamber.

3,561,406

FLOW-THROUGH STEAM GENERATOR

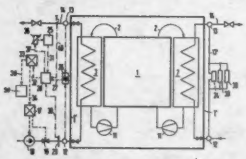
Michel Rupprecht, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Dec. 10, 1968, Ser. No. 782,549

Claims priority, application Germany, Dec. 12, 1967, P 15 76 882.8; Dec. 15, 1967, P 15 76 883.9

Int. Cl. F22b *1/02*

U.S. Cl. 122—32 **10 Claims**



Flow-through steam generator includes a boiler system having a heating zone and a nonheating zone, means for measuring boiler pressure loss and throughput at locations in the nonheating zone of the system, and load correction regulator means operatively connected to the measuring means and responsive to the measured data for adjusting feedwater supply and heat power input to the boiler system so that the feedwater supply and the heat power input are proportional to one another.

3,561,407

REVERSIBLE INTERNAL COMBUSTION ENGINE HAVING IMPROVED FUEL CONTROL MEANS

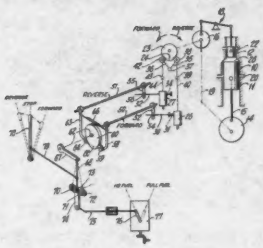
Matthew L. Foreman, Beloit, Wis.; Anker K. Antonsen, Merritt Island, Fla., and John H. Davids, Beloit, Wis., assignors to Fairbanks Morse Inc., New York, N.Y., a corporation of Delaware

Filed Aug. 15, 1969, Ser. No. 850,498

Int. Cl. F02d *27/00*

U.S. Cl. 123—41 **10 Claims**

In a reversible internal combustion engine having at least one cylinder, a crankshaft, a governor, and a starting control for determining engine starting in either forward or reverse direction, the provision of at least a pair of fuel injection pumps for the cylinder each having a fuel quantity control element, a single lobe pump actuating cam on the crankshaft, the cam and pumps being relatively arranged for cam actuation of one pump in each injection period of the engine operating in the forward direction and of the other pump in each injection period of the engine when operating in reverse



direction, operating means between the pump control elements and the governor including linkage means settable to a first setting affording governor operation solely of the control element of said one pump, and to a second setting affording governor operation solely of the control element of said other pump, and means operated by the engine starting control for effecting said first or second setting of the linkage means correspondingly to forward or reverse engine operation.

3,561,408

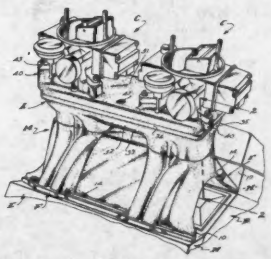
HIGH RAM MANIFOLD

Philip Weiand, Glendale, Calif. (2737 San Fernando Road, Los Angeles, Calif. 90065)

Filed Feb. 12, 1970, Ser. No. 010,912

Int. Cl. F02b *75/18, 75/22, 75/20*

U.S. Cl. 123—52 **10 Claims**



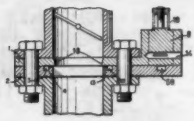
An intake manifold to be arranged with and adapted to conduct fuel and air between carburetor means and the inlet ports of an internal combustion engine including a plurality of compound curved tunnels with inlet ends in axial alignment with the discharge of the carburetor means and outlet ends corresponding in cross-sectional configuration and in registering open communication with related inlet ports, the inlet ends and the major longitudinal extent of the tunnels related thereto being D-shaped in cross section with their flat sides at and extending along the outside curvature of the tunnels, the minor portion of the tunnels adjacent their outlet ends joining smoothly with the D-shaped portions thereof and a plenum chamber between the inlet ends of the tunnels and the carburetor means communicating with the carburetor means and the tunnels to balance the pressures therebetween.

3,561,409

AUXILIARY DEVICE FOR CARBURETOR ENGINES FOR PREPARING THE FUEL CONDENSATE

Paul August, C. Capellades 1, Barcelona, Spain

Filed May 6, 1968, Ser. No. 726,995
Claims priority, application Germany, May 20, 1967, May 23, 1967, Aug. 18, 1967, 55762;55785—56534
Int. Cl. F02m *23/08, 23/02*
U.S. Cl. 123—97 4 Claims



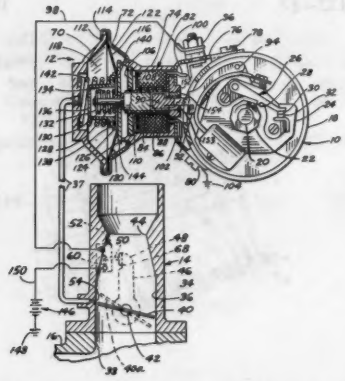
An auxiliary air intake for combustion engines which responds to pressure differentials between an air intake conduct of the engine and the atmosphere. The auxiliary air intake admits sufficient air to substantially completely burn hydrocarbons present in the fuel-air mixture in the engine intake conduct and which would otherwise be exhausted into the atmosphere where they form undesirable pollutants.

3,561,410

ENGINE IGNITION TIMING ARRANGEMENT

Raymond A. Soeters, Royal Oak, Mich., assignor to Holley Carburetor Company, Warren, Mich., a corporation of Michigan

Filed Nov. 29, 1968, Ser. No. 780,127
Int. Cl. F02p *5/04*
U.S. Cl. 123—117 5 Claims



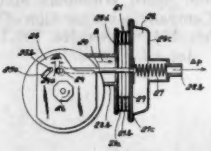
A primary embodiment of the invention employs a control assembly having a pressure responsive section and an electrically energizable section connected to each other and to the cooperating ignition distributor as by an arm pivotally connected to the distributor breaker plate; the pressure responsive section is connected so as to be responsive to engine intake vacuum, during certain predetermined conditions of engine operation, in order to advance the timing of the ignition spark while the electrically energizable section, comprised of a solenoid coil and armature, is operatively connected to electrical switch means also opened and closed to in accordance with preselected indicia of engine operation.

3,561,411

TECHNIQUE AND DEVICE FOR IMPROVING THE COMBUSTION AS WELL AS THE PERFORMANCE OF SPARK-IGNITION ENGINES OPERATING AT ALTITUDE

Adrain Calin Vasilescu, and Ion Stefan, Bucharest, Rumania, assignors to Ministerul Industriei Constructiilor De Masini, Bucharest, Rumania

Filed Aug. 27, 1968, Ser. No. 755,636
U.S. Cl. 123—117.1 8 Claims



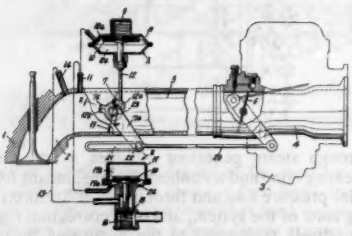
Internal-combustion ignition system in which the distributor has a pivotable spark-advance disc angularly displaceable relatively to the distributor cam and shiftable by a diaphragm subjected to reduced pressure of the engine (intake manifold) in order to permit compensation of the spark timing or variation in engine operation. The device includes a hermetically sealed capsule effective to shift the spark-advance disc or plate in the direction in which the reduced pressure of the engine is effective so as to increase the advance as air density decreases with increasing altitude. A vacuum line runs from the diaphragm to the manifold.

3,561,412

CONTROL APPARATUS IN AN ENGINE SUCTION CONDUIT TO PREVENT INCREASE IN THE FUEL-AIR RATIO DUE TO ADHERED FUEL ON THE CONDUIT WALLS

Shizuo Yagi, Asaka-shi; Akira Ishizuya, Kitaadachi-gun, Saitama-ken, and Tetsuo Sekiya, Iruma-gun, Saitama-ken, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 4, 1969, Ser. No. 813,439
Claims priority, application Japan, Apr. 4, 1968, 43/21804
Int. Cl. F02m *23/00, 23/02, 23/04*
U.S. Cl. 123—119 8 Claims



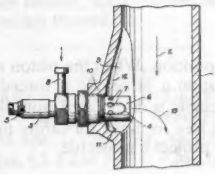
A second throttle valve is placed in a suction conduit through which an air fuel mixture passes to the engine cylinders, the second throttle valve being disposed downstream of a manually operated first throttle valve and being connected to a device which is responsive to the suction pressure prevailing in the conduit when the first throttle valve is closed such that the second throttle valve is also closed, there being an air inlet conduit opening into the supply conduit to supply a measured burst of ambient air into the supply conduit downstream of the second throttle valve to compensate for admission to the cylinders of fuel adhering to the walls of the supply conduit whereby the air fuel ratio of the mixture supplied to the cylinders is maintained. Additionally, the first and second throttle valves are coupled together and a spring is interposed between the second throttle valve and the

device responsive to the suction pressure in the supply conduit so that when the first throttle valve is opened during acceleration, the second throttle valve is opened therewith against the opposition of the spring irrespective of the pressure prevailing in the supply conduit.

3,561,413
PREHEATING ENGINE INTAKE AIR

Hansjurgen Zurner, Nurenberg, Germany, assignor to Maschinenfabrik Augsburg-Nurenberg Aktiengesellschaft, Nurenberg, Germany

Filed Oct. 14, 1968, Ser. No. 767,320
Claims priority, application Germany, Oct. 25, 1967, P1,576,220
Int. Cl. F02m *31/00*; **F02n** *17/00*
U.S. Cl. 123—122 **4 Claims**

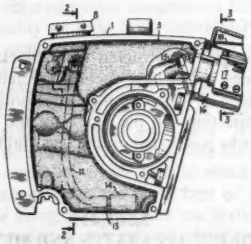


A pocket in the engine intake air pipe contains a heater plug into which fuel is supplied, ignited and mixed with the passing intake air. An end wall in the pocket catches at least a portion of the burning fuel and directs it toward the heater plug.

3,561,414
FUEL TANK FOR INTERNAL COMBUSTION ENGINE

Chris Schou, Greenwich, Conn., assignor to Textron, Inc., Providence, R.I., a corporation of Rhode Island

Filed Jan. 17, 1969, Ser. No. 792,073
Int. Cl. F02m *37/00*
U.S. Cl. 123—136 **6 Claims**

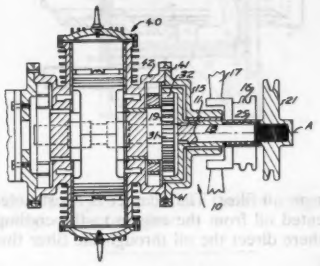


A fuel tank for internal combustion engines used on hand-held tools comprises a rigid container associated with the crank case of the internal combustion engine and a flexible bladder disposed within the rigid container. Fuel inlet and outlet ports are provided in the bladder. The rigid container has an air inlet port which presents the outside surface of the bladder with filtered air of the carburetor air intake chamber. As fuel is withdrawn from the bladder by the engine, the bladder collapses around the remaining body of fuel preventing the creation of a vacuum and thus eliminating the need for a fuel tank vent.

3,561,415
INTERNAL COMBUSTION ENGINE STARTER MECHANISM

Leopold W. Llewellyn, Burnaby, British Columbia, Canada, assignor to Kal-Pac Engineering Ltd., Vancouver, British Columbia, Canada, a corporation of British Columbia

Filed July 18, 1969, Ser. No. 843,127
Claims priority, application Great Britain, July 23, 1968, 35081/68
Int. Cl. F02n *1/100*
U.S. Cl. 123—185 **4 Claims**

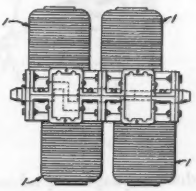


Starter mechanism for a high speed engine having epicyclic output speed reduction gearing rendering cranking difficult. A starter pinion shaft with a pinion at an inner end and a starter pulley at an outer end, the shaft slidable inwards and outwards for engagement and disengagement of the pinion with a ring gear applying multiplied torque to the crankshaft through a part of the reduction gearing. Beveled teeth on nondriving faces of the teeth of the pinion provide automatic disengagement as the engine starts.

3,561,416
INTERNAL COMBUSTION ENGINE CYLINDER BLOCK

Elmer C. Kiekhaefer, 2408 Cypress Garden Road, Winter Haven, Fla. 33880

Filed Apr. 25, 1969, Ser. No. 819,192
Int. Cl. F02b *75/18, 75/20, 75/24*
U.S. Cl. 123—193 **5 Claims**



A single cylinder engine block embodies the upper half of the crankshaft housing and has end flanges adapting the same to be assembled with other like single cylinder blocks to provide an engine having two or four opposed cylinders. The single cylinder or any number of cylinders in line therewith may be employed by adding the necessary crankcase halves thereto.

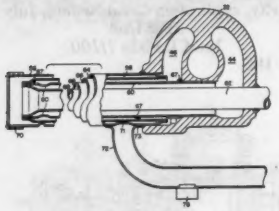
3,561,417
EXTERNALLY-MOUNTED OIL COOLER FOR INTERNAL-COMBUSTION ENGINES

Wayne Allman Downey, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill., a corporation of Delaware

Filed Feb. 19, 1969, Ser. No. 800,461
Int. Cl. F01m *5/00*; **F16n** *39/02*
U.S. Cl. 123—196 **6 Claims**

An oil cooler for an internal-combustion engine mounted externally of the cylinder block and having coolant-carrying

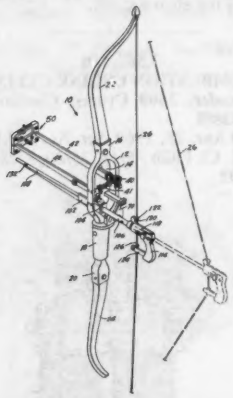
conduits mounted in heat-transfer relationship to oil-carrying conduits. The oil cooler includes an adapter portion mounted on the connection that is normally provided on a tractor for mounting an oil filter and the adapter in turn provides a connection for an oil filter. The adapter is constructed so as to channel heated oil from the engine to the cooling conduits and from there direct the oil through the filter then back to the engine.



3,561,418
ARCHERY BOW WITH BOWSTRING STRESSING DEVICE

Bert E. Fredrickson, 1208 S. Bond St., Green Bay, Wis.

Filed May 2, 1969, Ser. No. 821,330
Int. Cl. F41b *5/00*
U.S. Cl. 124—24 **6 Claims**



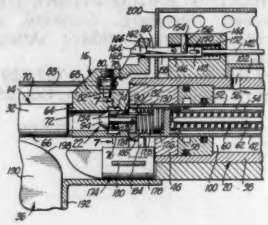
An archery bow having telescoping members mounted thereon that extend rearwardly of the bow. On one of the telescoping members is a handhold member that is used to support a bowstring during the stressing thereof. On the outer member of the two telescoping members there is a device that engages the inner telescoping member and will hold the inner telescoping member in a rearwardly extended position against the stress of the bowstring. Through the telescoping members is a device that is controlled from the handhold member to release the device that holds the inner telescoping member in a rearwardly extended position.

3,561,419
CROSS BOW WITH PNEUMATIC COOKING ASSEMBLY

Joseph R. Cucuzza, Sr., Claremont, Calif. (5903 Greenwood Ave. N., Seattle, Wash. 98103)

Filed Jan. 2, 1968, Ser. No. 695,059
Int. Cl. F41b *5/00*
U.S. Cl. 124—25 **9 Claims**

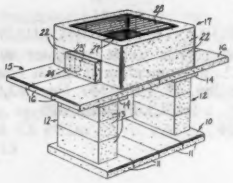
A repeating projectile launcher having an attached crossbow wherein there is a fluid actuated piston rod that retracts the string of the crossbow so as to cock the bow. The retractable piston rod has a fluid actuated coupling assembly on the forward end thereof so as to lockably engage an impeller connected to the bow string when the piston rod is in its forwardmost position. When the piston rod is retracted to its rearmost position a projectile is forced into the breach, the coupling assembly is disengaged from the piston rod and the piston rod is free to move forwardly under the force of the bow string to project a projectile.



3,561,420
OUTDOOR GRILL

Philip Paolella, Hamden, Conn., assignor to Plasticrete Corporation, Hamden, Conn., a corporation of Connecticut

Filed Jan. 22, 1969, Ser. No. 793,076
Int. Cl. A47j *37/00*; **F24b** *3/00*; **F24c** *15/08*
U.S. Cl. 126—8 **7 Claims**



An outdoor grill constructed from blocks, and having a plurality of legs, a flat base section erected thereon, and a flue section with at least one metal perforated member supported on projections on the blocks of the flue section and elongated blocks positioned on the legs and the flat base section.

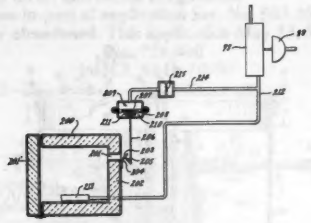
3,561,421
COOKING APPARATUS AND METHODS

William K. Body, Whittier; Russell J. Locascio; Harold W. Rice, Fullerton, and Douglas R. Scott, Santa Ana, Calif., assignors to Robertshaw Controls Company, Richmond, Va., a corporation of Delaware

Original application Feb. 12, 1965, Ser. No. 432,228, now Patent No. 3,384,071. Divided and this application Dec. 18, 1967, Ser. No. 714,138
Int. Cl. A21b *1/00*
U.S. Cl. 126—21 **6 Claims**

This disclosure relates to pneumatic control means utilized to control the operation of a cooking apparatus, whether the cooking apparatus has an oven, or a range-type burner, or both, such pneumatic control means comprising pneumatic actuators for controlling the flow of fuel to the burner means as well as for latching the oven door means in its closed posi-

tion for oven cleaning operations, adjusting the burner means to various positions thereof and automatically controlling a



cooking operation thereof, such features being utilized singly or in any combination thereof.

3,561,422

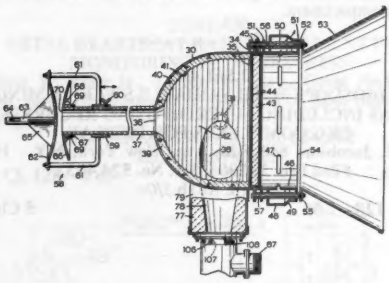
INFRARED RADIATION GENERATOR

Eric Colin-Smith, 4 Damien Road, Wellesley Hills, Mass.

Filed Apr. 1, 1969, Ser. No. 822,789

Int. Cl. F23d *13/14;* **F24c** *3/04*

U.S. Cl. 126—92 **6 Claims**



A portable infrared heater comprises a burner capable of burning a plurality of fluid fuels individually or simultaneously and a combustion chamber lined with refractory material. Means are provided to create a vortex of heated gases in a combustion chamber for even heating. A flue mounted wind cap permits variations of draft pressure from negative to positive values to cutoff. The combustion chamber may be open to the atmosphere for direct radiation or closed with a silicon carbide plate in which case secondary radiation is emitted from the outer face of such plate. The surfaces of the lining and the plate are textured to increase their area and radiation intensity. A stand permits radiation to be beamed in any desired direction.

3,561,423

DOOR STRUCTURE FOR A SELF-CLEANING OVEN

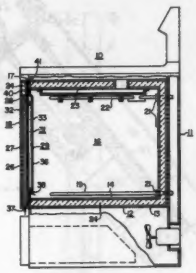
Calvin J. Holtkamp, Mansfield, and James A. Leach, Shelby, Ohio, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa., a corporation of Pennsylvania

Filed Jan. 7, 1969, Ser. No. 789,538

Int. Cl. F23m *7/00*

U.S. Cl. 126—198 **1 Claim**

Door structure for self-cleaning cooking apparatus of the pyrolytic type wherein substantially all of the heat for such purposes is supplied by a single heating element disposed near the top wall of the oven cavity. The door structure is characterized by the provision of an air duct which directs air therethrough such as to preheat the air prior to entry thereof



into the oven cavity at the bottom thereof and passage across the front edge of the oven liner.

3,561,424

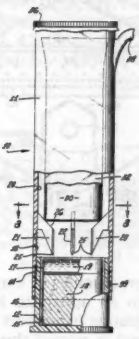
FOOD WARMING BY EXOTHERMIC REACTION

Anthony C. Failla, 26360 S. Western Ave., Lomita, Calif.

Filed Sept. 15, 1969, Ser. No. 866,783

Int. Cl. A47g *23/04;* **F24j** *1/00*

U.S. Cl. 126—263 **8 Claims**



A food warmer for packaged food substances in which two sacks of ingredients are packaged in one chamber and the package of food is placed in an adjacent chamber. Prongs on the second container pierce both sacks so that water in one sack is released to moisten a dry material such as lime in the other sack to generate an exothermic reaction sufficient to create enough warm vapor to surround and heat the package.

3,561,425

SOLAR HEATERS

James Geary Gardner, Riddings Cottage, Harestone Hill, Caterham, Surrey, England

Filed June 17, 1968, Ser. No. 737,473

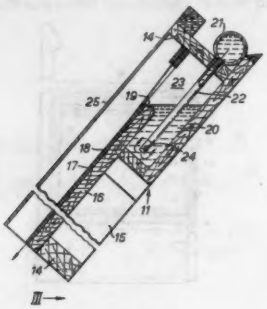
Claims priority, application Great Britain, June 22, 1967, 28783/67

Int. Cl. F24j *3/02*

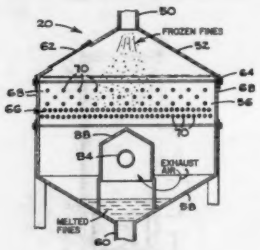
U.S. Cl. 126—271 **2 Claims**

A Solar Heater comprising a bank of panels each consisting of an inclined wooden frame supporting a heat collecting

lamina and an adjacent backing surface the lamina collecting sunlight and the backing surface having a horizontal top edge over which liquid is supplied and is heated as it descends between the lamina and the backing surface.



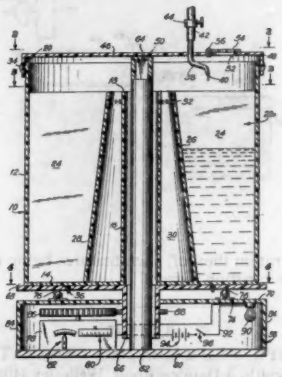
3,561,426
FINES MELTER
Thomas P. Wheeler, Los Gatos, Calif., assignor to FMC Corporation, San Jose, Calif., a corporation of Delaware
Filed Feb. 17, 1969, Ser. No. 799,839
Int. Cl. F24c *1/00*
U.S. Cl. 126—343.5 **7 Claims**



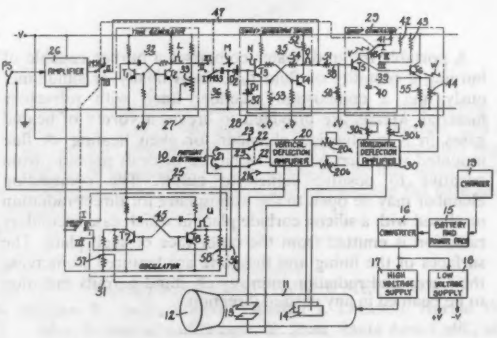
Finely divided frozen granules of extract such as coffee or the like are melted in an apparatus having closely spaced tubes which act as a grating to support the frozen granulated extract. A heating fluid is passed through the tubes which causes melting of the extract that is in direct contact with the tubes. As the extract is melted, the air between the surfaces of the frozen granules is released and the melted extract drips from the tubes into a catch tank.

3,561,427
DEVICE FOR MEASURING URINARY OUTPUT
Albert Thomas Profy, 42-07 Parsons Blvd., Flushing, N.Y.
Filed Apr. 3, 1968, Ser. No. 718,558
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 **9 Claims**

A device for measuring the volume of urinary output during a given period of time. The device includes a drum member which has a vertical central axis and an open top, means being situated within the drum member to divide the latter into a plurality of equal compartments which are uniformly distributed about the central axis of the drum member with the center of each compartment located at a given angular distance from the center of the next compartment. A conduit member has an outlet end situated at any given instant over one of the compartments so that urine can flow through said conduit member from said outlet end thereof into a compartment to be collected therein. A support means supports at least one of these members for rotary movement about the central axis of the drum member, and a turning means is operatively connected with this one member for periodically turning the latter through the angular distance between the compartments at predetermined time intervals all of which are equal. The drum member has outer wall portions which respectively form parts of the several compartments and which are transparent and carry suitable graduations for indicating the volume of urine which collects in each compartment.



3,561,428
CARDIOSCOPE WITH VARIABLE SWEEP-TIMING MEANS INCLUDING SUPERIMPOSING RECURRING EKG COMPLEXES FOR DISPLAY
Jerry H. Jacobson, 880 Fifth Ave., New York, N.Y. 10009
Filed Feb. 2, 1966, Ser. No. 524,443
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 **5 Claims**

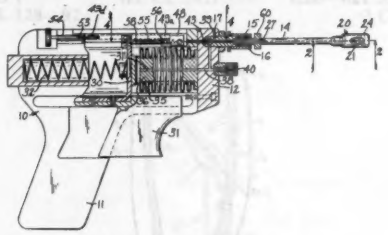


This disclosure relates to a cardioscope including a cathode-ray tube and method for displaying superimposed succeeding groups of electrocardiac complexes. To superimpose the complexes occurrence of a first complex is detected and a timing cycle generated in response thereto and a sweep of the cathode-ray tube is initiated at the end of the timing cycle after occurrences of all the complexes of each group and before the occurrences of the first complex of the next group.

3,561,429
INSTRUMENT FOR OBTAINING A BIOPSY SPECIMEN

Warren R. Jewett, Orange, and Walter C. Bialobrzeski, Kensington, Conn., assignors to Eversharp, Inc., Milford, Conn., by direct and mesne assignments

Continuation-in-part of application Ser. No. 503,166, Oct. 23, 1965, now abandoned. This application May 23, 1968, Ser. No. 731,400
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 10 Claims

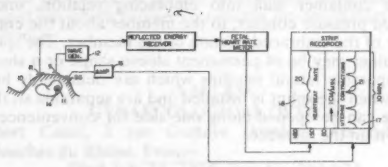


An instrument useful in obtaining biopsy specimens or the like from the body. In particular, the instrument is in the form of a gun having a triggerlike mechanism which, in a single stroke, will activate a vacuum-producing means to draw a specimen into a tip supported by the gun and, thereafter, cause a portion of the specimen drawn into the tip to become severed.

3,561,430
FETAL HEARTBEAT RATE INSTRUMENT FOR MONITORING FETAL DISTRESS

William W. Filler,Jr., 77 Bayview Ave., Great Neck, N.Y., and Jorge O. Pantle, J. B. Blanco 624 Ap6, Montevideo, Uruguay

Filed July 20, 1967, Ser. No. 654,852
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 6 Claims

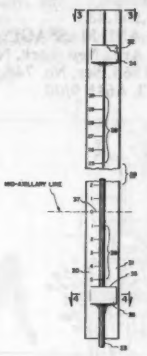


Particularly during childbirth it is important to monitor fetal heartbeats to determine distress, and this is accomplished by use of automatic electronic instruments which respond to directional transducers rested upon the outer maternal abdominal wall. An automatic tracking system is provided operating the receiving transducers to follow movements of the fetus, thereby optimizing signal response without manual intervention or attention. The detected fetal heartbeats are processed to provide a visual indication of the heartbeat rate which is made available for every heartbeat period. Further signals are taken representative of the abdominal contractions during labor to correlate on a recorded display the relationship of the fetal heartbeat rate thereby providing information for diagnosing fetal distress.

3,561,431
CENTRAL VENOUS PRESSURE MONITOR SYSTEM AND MANOMETER SCALE THEREFOR

Karl A. Pannier, Jr., Salt Lake City, Utah, assignor to Sorenson Research Corporation, Salt Lake City, Utah, a corporation of Utah

Filed June 10, 1968, Ser. No. 735,837
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 4 Claims

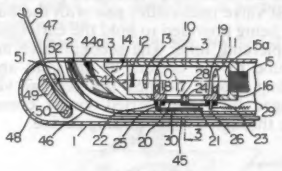


A system for monitoring the central venous pressure of a medical patient and, in particular, a manometer scale and flexible manometer-tube combination in such system wherein the liquid level in the tube is easily readable with reference to the index marks on the scale. The scale in a preferred form of the invention is frictionally retained by and slidable along the tube in a manner hereinafter described.

3,561,432
ENDOSCOPE

Shigeru Yamaki, and Rikizo Murata, Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Shibuya-ku; Tokyo, Japan, a Japanese corporation

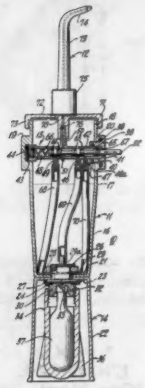
Filed June 27, 1968, Ser. No. 740,737
Claims priority, application Japan, July 29, 1967, Aug. 16, 1967, 42/48685;42/52539
Int. Cl. A61b *1/06*
U.S. Cl. 128—6 6 Claims



An endoscope having a forward end casing adapted to be inserted into a hollow portion of a living body and provided with an objective lens system for forming an image of an object by the light therefrom, a control casing provided with ocular means, an elongated tube connecting the forward end casing and the control casing, and an image transmitting optical system extending through the elongated tube. The forward end of the image transmitting optical system is located behind the objective lens system adjacent thereto so as to form the image of the object on the forward end of the image transmitting optical system so that the image is transmitted through the image transmitting optical system to the rearward end thereof, while the rearward end of the image transmitting optical system is located in front of the ocular means adjacent thereto so that the image thus transmitted to the rearward end of the image transmitting optical system is viewed through the ocular means. The objective lens system comprises at least two lens elements or lens groups each movable along the optical axis. The two lens elements or lens groups are operatively coupled with each other so that the movement of one of the two lens elements or lens groups causes the other to be moved relative thereto to thereby permit the distance between the two lens elements or lens groups to be varied, thus resulting in the variation in the focal length of the objective lens system. String means extends through the elongated tube with its one end connected to a control mechanism provided in the control casing and with its other end connected to one of the two lens elements

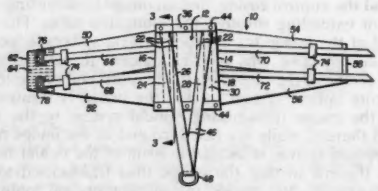
or lens groups so that the two lens elements or lens groups are moved simultaneously by actuating the string means by the control mechanism.

3,561,433
DENTAL CLEANING AND MASSAGING DEVICE
Leslie J. Kovach, 880 Fifth Ave., New York, N.Y.
Filed July 22, 1968, Ser. No. 746,550
Int. Cl. A61h 9/00
U.S. Cl. 128—66 9 Claims



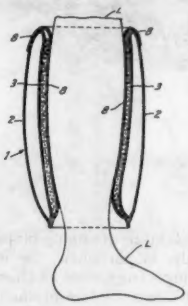
A dental cleaning and massaging device includes a water tank and CO_2 cartridge-containing housing arranged end to end therewith to form a handle. The top of the tank is closed by a screw cap supporting a nozzle. A slide valve is mounted in the tank and includes two pairs of normally closed interconnecting inlets and outlets. A piercing tube is located in the housing and communicates through a pressure regulating valve and a first valve inlet-outlet pair with the tank bottom, a screw casing being provided to hold the cartridge and force it against the piercing tube. The second valve inlet is connected by a tube to the bottom of the tank and an axial tapered coupling nipple defines the second valve outlet which is engaged by a cap-carried socket communicating with the nozzle through a water pulsing device.

3,561,434
DUAL-PURPOSE BELT
Robert W Kilbey, P.O. Box 345, DeFuniak Springs, Fla.
Filed Sept. 17, 1968, Ser. No. 760,226
Int. Cl. A61h 1/02
U.S. Cl. 128—75 5 Claims



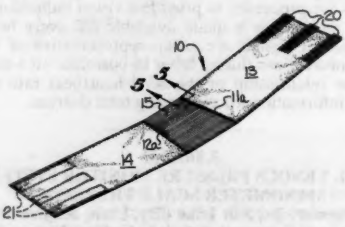
A dual-purpose orthopedic belt including a back pad with stays therein, a band or bands affixed to the back pad to be wrapped about the pelvic region of a person with the back pad abutting against the back of the person at his lumbosacral area and fastened together in front, and one or more elongated removable straps affixed to the belt for connection to a pulling device. The belt may be used with the stays removed from the back pad as a pelvic traction belt, and may also be used with the stays in the back pad and the straps removed from the belt as a lumbosacral support. The straps may be designed for single pull or double pull applications when the belt is used as a pelvic traction belt. The bands may be elastic, and the back pad may have a soft removable liner.

3,561,435
COMBINED SPLINT AND COOLANT CONTAINER
Gary W. Nicholson, Scottsdale, Ariz., assignor to Development, Inc., Cherry Hill, N.J., a corporation
Filed Nov. 15, 1968, Ser. No. 776,140
Int. Cl. A61f 5/04, 7/10
U.S. Cl. 128—82.1 7 Claims



The combined splint and container comprises an inflatable splint having inner and outer walls defining an inflatable chamber and a flexible container wall disposed in face to face spaced relation to the inner wall and connected thereto at its margins and extending from one end thereof to and beyond the other end, so as to form with the inner wall a container for coolant. The splint and container are placed in embracing relation to a member to be treated with the container, filled with coolant, usually crushed ice, in contact with the member. While held in embracing relation, the splint is inflated by oral pressure so as to stiffen the splint and force the container wall into embracing relation, under preselected pressure contact, to the member about the entire periphery of the embraced portion of the member. The splint and container may be of permanent sleeve shape or a sleeve having separable lateral margins which are detachably held together when the splint is installed and are separable so that the sleeve can be opened along one side for convenience in installing it on the member.

3,561,436
THORACIC BELT
John F. Gaylord, Jr., Matthews, N.C., assignor to Medical Specialties, Inc., Charlotte, N.C., a corporation of North Carolina
Filed May 6, 1968, Ser. No. 726,902
Int. Cl. A61f 5/04
U.S. Cl. 128—87 6 Claims



A belt for reinforcing the thorax of a patient and including elongate substantially dimensionally stable pliable end panels separated by an elastic intermediate panel of trapezoidal shape secured to proximal end edges of the end panels, with fastening means for detachably securing distal end portions

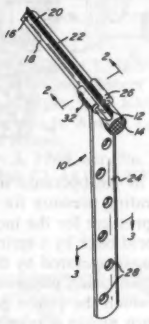
of the end panels in overlapping relationship, and wherein each end panel is provided with a body-engaging facing of resilient spongelike material presenting a friction surface to prevent slippage of the belt when worn by a patient.

3,561,437

APPARATUS FOR FIXING FRACTURES OF THE FEMUR

Jose Luis Orlich, Apartado 81, San Jose, Costa Rica

Filed Mar. 20, 1968, Ser. No. 714,661
Claims priority, application Costa Rica, Nov. 8, 1967, 1,660
Int. Cl. A61f 5/04
U.S. Cl. 128—92 3 Claims



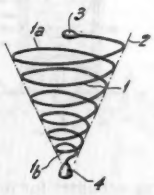
Apparatus for fixing fractures of the femur includes a plate which is held by screws to the upper part of the femur and a channel like member fixed to the proximal end of the plate for slidingly engaging a flanged nail which is driven into the head of the femur. A second embodiment substitutes a cannulated pin which is inserted into the intramedullary canal of the femur.

3,561,438

GYNAECOLOGICAL DEVICE

Robert Canel, 2 rue Gustave Desplace, Aix-en-Provence Bouches du Rhone, France

Filed July 11, 1968, Ser. No. 744,023
Int. Cl. A61f 5/46
U.S. Cl. 128—130 2 Claims



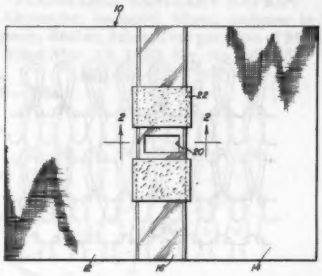
A gynaecological device for birth control in the form of a resilient spiral filament the turns of which decrease in size from one end to the other to fit into the uterine cavity, the largest turn terminating in a bulged portion serving as a stop means for an instrument which assists the introduction of the device, the smallest turn terminating in a retaining cone which holds the device in position.

3,561,439

LAPAROTOMY SHEET WITH PLASTIC CENTER STRIP HAVING ABSORBENT LAYER

Robert T. Bayer, Asheville, N.C., assignor to Mars Manufacturing Company, Inc., Asheville, N.C., a corporation of North Carolina

Filed Dec. 12, 1968, Ser. No. 783,324
Int. Cl. A61f 13/00
U.S. Cl. 128—132 7 Claims



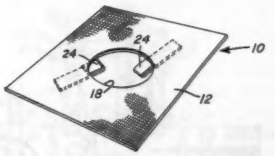
A surgical sheet or drape of a relatively large rectangular panel of nonwoven paper material having a centrally disposed strip of plastic incorporated therein with a fenestration centrally disposed in the plastic strip and a layer or covering of absorbent material on the plastic strip in spaced relation to the periphery of the fenestration.

3,561,440

SELF-ADHERING TABS FOR SURGICAL DRAPES AND GARMENTS

Robert T. Bayer, Asheville, N.C., and Robert M. Woronoff, Atlanta, Ga., assignors to Mars Manufacturing Company Inc., Asheville, N.C., a corporation of North Carolina. a part interest and C. R. Bard Inc., a corporation of New York. a part interest

Filed Sept. 23, 1968, Ser. No. 761,412
Int. Cl. A61f 13/00
U.S. Cl. 128—132 7 Claims



A tab or area of self-adhering adhesive material incorporated into a disposable surgical drape or garment to enable anchoring of the surgical drape or sterile garment in position while conducting an operative procedure.

3,561,441

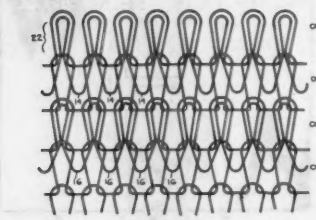
SURGICAL PRODUCT FOR DRESSING AND TREATING WOUNDS, AND METHOD OF MANUFACTURE

Victor J. Lombardi, 2715 Charlotte Lane, Burlington, N.C.

Filed Aug. 10, 1967, Ser. No. 659,697
Int. Cl. A61l 15/00
U.S. Cl. 128—156 43 Claims

An improved surgical fabric for covering and treating wounds and promoting healing thereof is described. The fabric includes nonsticking loops, sheared or unsheared, on at least one face for contacting the wound and for spacing the remainder of the fabric away from the wound. The yarn loops may be synthetic and may include a polyfluorinated polyolefin in filament, spun or plastic ribbon form as a nonsticking material, or may incorporate spun yarns of natural fibers suitably treated to impart nonstick characteristics. The

nonsticking loops may be included as part of a knitted fabric construction, and additional, but shorter loops, sheared or unsheared, may be provided in the same fabric for wicking and/or absorbing liquids away from the region of the wound which is being treated. The improved surgical fabric may be produced on small circular knitting machines so as to produce a tubular, seamless fabric which can be placed around a limb or other body portion which is to be covered



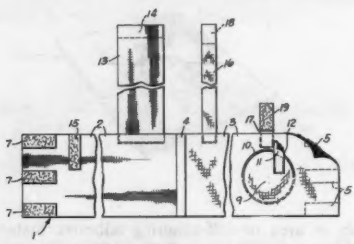
and treated. Stretch material may be incorporated in the tubular fabric to help prevent the accumulation of wound fluids and to assist in the retention of the dressing on a preferred placement over a wound. Although the fabric is described with reference to important surgical applications, it will be understood that the fabric is generally useful in applications requiring a transmittal and/or absorption of liquid from any surface area, as for example in diaper constructions or constructions for other articles of apparel.

3,561,442

MASTECTOMY COMPRESSION BANDAGE

John T. Goswitz, 601 N. Eight St., Manitowac, Wis. 54220

Filed Nov. 15, 1968, Ser. No. 776,016
Int. Cl. A61f
U.S. Cl. 128—157 **8 Claims**



A medical bandage for a radical mastectomy which includes a relatively wide body strip adapted to encircle the body. Approximately one half of the length of the strip is formed of elastic material while the other half is formed of a nonelastic material and the free ends of the strip are joined together at the front of the body. The elastic section covers the area of the mastectomy, while the nonelastic area is provided with a brassiere cup and covers the remaining breast. An elastic shoulder strap is attached to spaced portions of the elastic section and extends over one shoulder, while a nonelastic shoulder strap is connected to spaced portions of the nonelastic section and extends over the opposite shoulder.

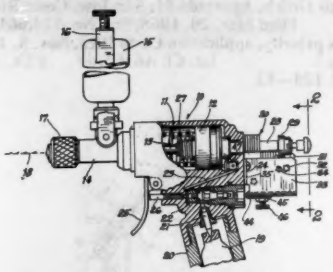
The bandage acts to hold a dressing in place over the area of the mastectomy with a firm constant pressure and eliminates adhesive tape burns.

3,561,443

INOCULATOR GUN WITH DELAYED ACTION

Oscar H. Banker, 261 Breezewood Drive, Bay Village, Ohio

Filed Sept. 6, 1968, Ser. No. 757,932
Int. Cl. A61m *11/06*
U.S. Cl. 128—173 **10 Claims**



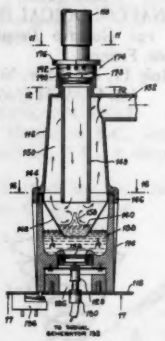
An improvement in gas-operated inoculator guns which ensures correct operating pressure for the gun and hence a correct penetrating pressure for the inoculant. The pressure-producing piston is held back by a spring-pressed latch which is released by a plunger operated by the pressure of the gas behind the piston. The spring pressure is adjustable so that the gas pressure at which the piston is released can thereby be varied. This in turn makes it possible to adjust the pressure at which the inoculant is introduced under the skin. The latch prevents operation of the gun when insufficient pressure is available for a satisfactory inoculation.

3,561,444

ULTRASONIC DRUG NEBULIZER

Raymond Marcel Gut Boucher, Metuchen, N.J., assignor to Bio-Logics, Inc., Salt Lake City, Utah, a corporation of Delaware

Continuation-in-part of application Ser. No. 510,537, Nov. 30, 1965, now abandoned. This application May 22, 1968, Ser. No. 730,981
Int. Cl. A61h *1/00;* **A61m** *15/00*
U.S. Cl. 128—194 **15 Claims**



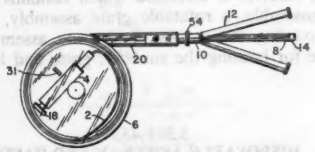
An ultrasonic drug nebulizer for forming droplets from a medicated solution and emitting the same into the surrounding atmosphere having a receptacle with a base and walls to form a liquid containing chamber, a truncated conical cup for containing the medicated solution removably mounted in the upper portion of the receptacle so that its smaller base is below its larger base, the smaller base being closed and the larger base being open, a dome containing an inner, vertically disposed, column and an outer, vertically disposed, column surrounding the inner, vertically disposed, column removably mounted to the receptacle above the truncated conical cup, the inner, vertically disposed, column and the outer, vertically disposed, column both being open at the

bottoms thereof, the outer, vertically disposed, column having an opening therein adjacent the top thereof, a transducer mounted in the base of the receptacle, gas flow regulating means in the top of the inner, vertically disposed, column, means for exciting the transducer at an ultrasonic rate such that a geyser is formed from the medicated solution in the truncated conical cup, and means for introducing gas into the inner, vertically disposed, column through the gas flow regulating means in the top thereof so that there is a pressure difference between the gas in the column and the ambient atmosphere to thereby sweep the mist of the geyser into the outer, vertically disposed, column to be discharged through the opening therein, the flow rate of the gas introduced into the inner column controlling the size of the liquid droplets which are so discharged from the column.

3,561,445
CATHETER PLACEMENT UNIT

Dean R. Katerndahl, Wheaton; Robert P. Earl, La Grange; Gary D. Evans, Waukegan, and Richard M. Chittenden, Grayslake, Ill., assignors to Abbott Laboratories, Chicago, Ill., a corporation of Illinois

Filed July 3, 1968, Ser. No. 742,333
Int. Cl. A61m *5/00*
U.S. Cl. 128—214.4 **9 Claims**

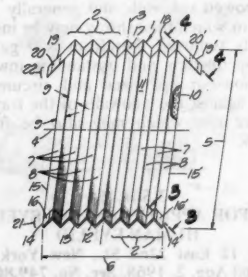


A catheter placement unit adapted to advance a catheter in a sterile state comprising a catheter having a hub, a concentric needle and hub, a sheath, and a catheter container adapted to enclose a relatively long catheter and being adapted to advance the catheter from the container through the needle and sheath without exposing the catheter. The container in its preferred form is constructed of two halves which snap together to enclose the catheter, and snap apart to expose the catheter. The halves are relatively rotatable, and one half has two concentric walls, the outer wall providing frictional force on the catheter coiled therein, and causing the catheter to advance from the container when the said half is rotated relative to the remaining half.

3,561,446
PLEATED DIAPER

John Leslie Jones, Sr., 1070 Glen Oaks Blvd., Pasadena, Calif. 91105

Filed Oct. 20, 1969, Ser. No. 867,713
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 **2 Claims**

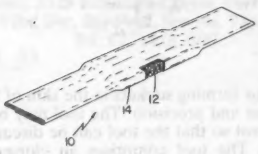


This invention teaches a single-use, rectangular area, disposable diaper, having multiple longitudinal, parallel pleats disposed in accordion-type folds in the area, said folds being positioned on a baby's torso parallel to the baby's legs. The accordion pleated folds of this diaper simplify the placement of the diaper in the baby's crotch in a position most suitable for maximum absorption and retention of the baby's waste products.

3,561,447
FLUSHABLE SANITARY NAPKIN

Robert R. Alexander, Sudbury, Mass., assignor to The Kendall Company, Boston, Mass, a corporation of Massachusetts

Filed Mar. 13, 1969, Ser. No. 807,055
Int. Cl. A61f *13/16*
U.S. Cl. 128—290 **7 Claims**

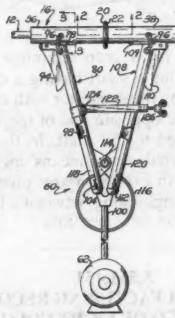


A bonded nonwoven fabric suitable for use as a flushable cover for a disposable diaper or a sanitary napkin is produced by bonding a thin web of textile-length fibers with a fugitive binder comprising a mixture of a soft acrylic binder and a polyvinyl alcohol. Such a fabric has sufficient tensile strength to function usefully as a cover whether dry or damp, but then, after use, may be readily disposed of by flushing since it disintegrates into a thin fibrous slurry when agitated in water.

3,561,448
BLOOD VESSEL SUTURING APPARATUS

Jacob Peternel, 2917 E. 121 St., Cleveland, Ohio 44120

Filed Aug. 30, 1968, Ser. No. 756,583
Int. Cl. A61b *17/11*
U.S. Cl. 128—334 **11 Claims**

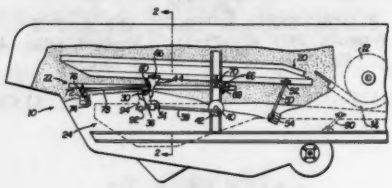


An improved clamp assembly for positioning blood vessels applies suction to end portions of blood vessels to hold the blood vessels in a generally cylindrical shape with outwardly flaring ends which are held in engagement to facilitate interconnecting or sewing together of the blood vessels. Accordingly, the clamp assembly includes a pair of sleeves each of which defines a generally cylindrical manifold which is connected in fluid communication with a source of vacuum or low pressure. The manifold is also connected in fluid communication with an interior portion of the sleeve to thereby apply suction to the outer wall of an empty blood vessel and draw or urge the wall of the empty blood vessel outwardly to a shape similar to the normal shape of the blood vessel.

3,561,449
CUTTER TOOL
Frank A. Bellantoni, 101 Helena Ave., Yonkers, N.Y. 10710
Filed May 1, 1968, Ser. No. 725,731
Int. Cl. A61b *17/32*
U.S. Cl. 128—305 **3 Claims**

A cutter tool for forming sockets in the skin of the scalp of a person with ease and precision. The tool may be produced at a reasonable cost so that the tool can be discarded after a single operation. The tool comprises an elongated handle cylindrical in cross section, with a detachable tubular head open at both ends, with a knife edge at one end. The head is formed with guide slots and bleed holes.

3,561,450
COUNTERBALANCING MECHANISM FOR COMBINE
Robert L. Dahlquist, Rock Island, Ill., assignor to J. I. Case Company, Racine, Wis., a corporation of Wisconsin
Filed July 3, 1968, Ser. No. 742,270
Int. Cl. A01f *12/30*
U.S. Cl. 130—26 **12 Claims**

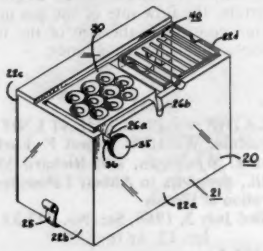


A drive mechanism for a crop separator of a separating mechanism and including a shaft having a drive at one end thereof for reciprocating the separator with counterbalancing means connected to the opposite end of the shaft for absorbing shock loads supplied to the shaft. In the illustrated embodiment, the counterbalancing means includes a pair of springs telescoped on an extension arm pivoted to the shaft with the respective springs acting between a fixed stop on the mechanism and a stop on the extension.

3,561,451
PROCESS OF MANUFACTURING RECONSTITUTED TOBACCO OF LIGHT COLOR
Harry Jacin, Norwalk, and Joseph Fiore, Fairfield, Conn., assignors to American Machine & Foundry Company
No Drawing. Filed May 17, 1967, Ser. No. 639,032
Int. Cl. A24b *03/14, 15/08*
U.S. Cl. 131—143 **1 Claim**

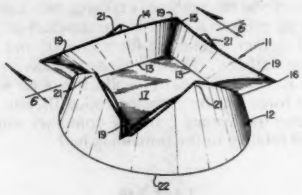
A process of treating tobacco in the manufacture of reconstituted tobacco is disclosed wherein the color of the finished reconstituted product is lightened by the removal of basic polyphenols present in the starting batch. The process involves washing the tobacco with water to form an aqueous extract thereof, separating the extract and treating it with absorbent agents such as activated alumina or polyamids to remove the basic polyphenols and finally reincorporating the extract minus the removed polyphenols into the fibrous tobacco mass.

3,561,452
ASH TRAY WITH CIGARETTE EXTINGUISHER AND ASH REMOVING GRATING
Mario Artelli, c/o M.S. Franca C. Costa Lines, Atlantic Cruise, Inc. 520 Biscayne Blvd., Miami, Fla. (Corso Italia, 44/22 Rapallo Geneva, Italy)
Filed Oct. 17, 1968, Ser. No. 768,421
Int. Cl. A24f *19/00, 19/14*
U.S. Cl. 131—235 **7 Claims**



An ash receiver is disclosed which contains a rotatable snubber assembly, a rotatable grate assembly, a lever assembly coupling the snubber and grate assemblies and a receptacle for housing the snubber, grate and lever assemblies.

3,561,453
DISPOSABLE ASHTRAY AND BASE
Jesse J. Kline, 8583 Pacific Place, Denver, Colo. 80227
Filed Aug. 11, 1969, Ser. No. 849,061
Int. Cl. A24f *19/00;* **A47g** *23/032*
U.S. Cl. 131—241 **7 Claims**



A disposable insert-type ashtray and base therefor with the tray being made of a single blank of a resilient sheet material having at least an upper heat resistant layer. Fold lines are provided substantially inwardly of and along each edge which permit the blank to be folded along the lines into an open container characterized by a flat bottom, upright inclined and inwardly bowed sidewalls and generally V-shaped corners. A base into which the ashtray may be inserted for support and readily removed therefrom is a generally hollow body with a top opening and upstanding inwardly inclined spaced projections or lips sized and circumferentially arranged to bear against the sidewalls of the tray to releasably hold it in place and which may also be formed from a disposable blank.

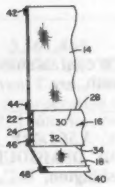
3,561,454
IMPLEMENT FOR APPLYING FALSE EYELASHES TO A HUMAN EYELID
Jon O'Connell, 12 East 22nd St., New York, N.Y. 10010
Filed Aug. 2, 1968, Ser. No. 749,805
Int. Cl. A45d *44/00*
U.S. Cl. 132—1 **1 Claim**

A false-eyelash applicator constituting a pair of substantially parallel elongated shanks integral with a pair of elongated tips, at least one tip is flexible and the tips are at such

angles with respect to their associated shanks that when the shanks are manipulated to force the tips into contact with

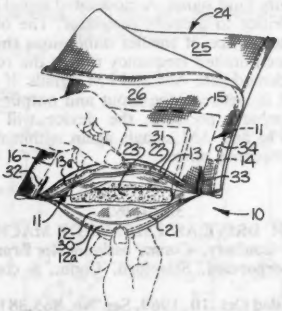
one another, the tips engage on opposite sides of a plane which is at an angle to the plane between the shanks.

3,561,455
HAIR PROTECTOR
Richard G. Gregg, 2410 Holmes Ave., Huntsville, Ala.
Filed Nov. 7, 1969, Ser. No. 874,862
Int. Cl. A45d *8/00*
U.S. Cl. 132—46 **7 Claims**



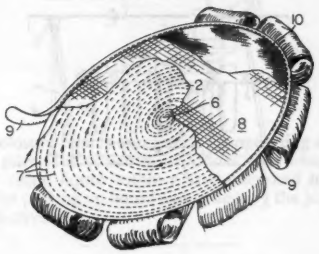
A hair protector that can be placed over a woman's hair style for protecting the hair while sleeping and cover hair rollers, etc., when hair is put up, asleep or awake, and which is made in three tubular panels, a top panel being of light, open weave material, an intermediate panel being of two ply construction with an inner layer being of foam material and an outer layer of smooth or slick material, and a bottom panel being of light net material. An elastic band is attached around the bottom of the lower panel to hold the protector on the head and provide lateral adjustment and a sliding ring is positioned around the top to provide vertical adjustment.

3,561,456
PORTABLE CLEANING DEVICE
Charles Wayland Stuart, Jr., 926 Nottingham Road, Charlotte, N.C. 28211
Filed Sept. 9, 1968, Ser. No. 758,248
Int. Cl. A45d *40/00*
U.S. Cl. 132—79 **6 Claims**



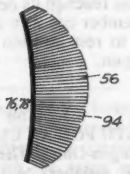
A portable cleaning device adapted for use as an ablutionary device and including a generally flat, moisture impervious container having an access opening thereinto and separable sealing means normally closing the access opening to provide a moisture tight container but being separable to permit access into the interior of the container, a moisture absorbent washing member removably disposed within said container and adapted to contain therein a washing solution, and a drying member composed of a pair of layers of moisture absorbent material enclosing the container therebetween at one end and being of such length as to extend beyond the container to facilitate use as a drying medium, the drying member being secured to the container to maintain the container in position therebetween and to reinforce the edges of the container at opposite ends of the access opening.

3,561,457
THREE POSITION WIGLET
Irene A. Duesel, 3329 Robinwood Drive, Fort Wayne, Ind.
Filed Dec. 26, 1968, Ser. No. 786,947
Int. Cl. A41g *3/00*
U.S. Cl. 132—53 **4 Claims**



A detachable wiglet to be worn on a woman's hair in any of three positions is disclosed which is constructed by sewing a fringe of hairlike filaments to a foundation of burlap in a spiral pattern beginning near the periphery of the burlap and terminating near the center. The wiglet is an oval shape having a major axis of substantially 7½ inches and a minor axis of substantially 6⅛ inches.

3,561,458
FALSE EYELASHES WITH WOVEN EDGES
Benjamin Udes, 360 E. 55th St., New York, N.Y. 10022
Original application Aug. 6, 1968, Ser. No. 750,502, now Patent No. 3,454,015, dated July 8, 1969. Divided and this application Jan. 30, 1969, Ser. No. 795,201
Int. Cl. A41g *5/02*
U.S. Cl. 132—53 **6 Claims**



False eyelashes made by weaving operation in which a strip of paper or other suitable material is employed as a warp. At

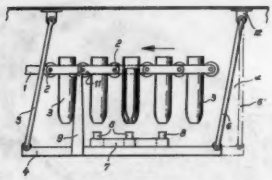
both side edges of the strips, additional warps are arranged in the form of threads. A weft constituted by a Nylon filament or the like is woven through the warp by the use of a shuttle. The resulting product is then curled and/or cut longitudinally to form sections whereof the weft constitutes the lashes and the warp threads constitute a woven support for the lashes. The strip is removed.

3,561,459

SPRAY CENTERING DEVICE FOR BATTLE-CLEANING MACHINES

Joachim Clongwa, Dortmund-Wambel; Wilfried Ernst, Dortmund-Horde, and Joachim Kuhnt, Dortmund, Germany, assignors to Holstein & Kappert Maschinenfabrik Phonix G.m.b.H., Postfach, Germany

Filed Feb. 13, 1969, Ser. No. 799,008
Claims priority, application Germany, Mar. 9, 1968, P 16 57 177.0
Int. Cl. B08b *3/02;* **B67c** *1/00*
U.S. Cl. 134—144 **5 Claims**



In a bottle-cleaning machine an elongated chain advances in a horizontal path and carries longitudinally spaced bottles. Abutment portions project from the chain. A supporting frame is mounted below the chain for swinging movement from rest position to a deflected position in which it is swingingly deflected in the direction of advancement of the chain. One or more spray nozzles are provided on the supporting frame and arranged to spray cleaning fluid against the objects with which they are in registry. An engagement arrangement is provided for controlling the motion of the support means so as to effect the swinging movement thereof to the deflected position while maintaining substantial registry of the nozzle with selected ones of the objects during such motion, and this arrangement means comprises an arm provided on the support means and extending towards the chain, and a substantially X-shaped contact member turnably mounted on the free end of the arm so that one pair of its four projections is operative for the desired purpose, namely the upwardly extending projection engaging with one of the above-mentioned portions of the chain and one of the horizontally extending projections engaging with a stationary detent which prevents turning of the contact member until the support means has reached its deflected position at which point the contact member can turn and the support means is free to swing back to rest position to begin its travel to a deflected position again.

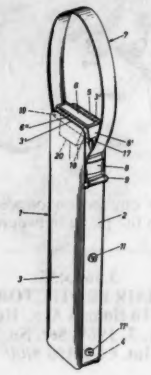
3,561,460

SHEATH FOR AN UMBRELLA

Fritz Bremshey, Solingen-Ohligs, Germany, and Werner Ludwig, Paris, France, assignors to Telesco Brophey Limited, Montreal, Quebec, Canada

Filed Mar. 26, 1969, Ser. No. 810,538
Claims priority, application Germany, Mar. 30, 1968, P 17 57 103.8; Apr. 13, 1968, P 17 57 241.7
Int. Cl. A45b *25/18, 25/24*
U.S. Cl. 135—33 **7 Claims**

The sheath includes a carrying strap which overlies the open end of the sheath. The carrying strap has different attachment points on the sheath so it can assume a handle condition or alternatively it can assume a cover condition over the open end of the sheath.

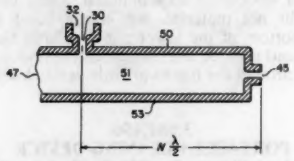


3,561,461

FLUIDIC DEMODULATOR

Jonathan E. Fine, Washington, D.C., and Carl J. Campagnuolo, Chevy Chase, Md., assignors to the United States of America as represented by the Secretary of the Army

Filed June 3, 1968, Ser. No. 734,064
Int. Cl. F15c *1/04*
U.S. Cl. 137—1 **2 Claims**



A fluidic device to demodulate a fluidic AC carrier signal to obtain a pure fluid signal. A modulated signal is impressed through an orifice to a cavity resonator. The output of the resonator is an orifice of smaller dimensions than the input orifice. Between limited frequency ranges the resonator will successfully demodulate AM and FM signals. If another orifice is placed in between the input and output orifices and opened to ambient pressure, the device will successfully demodulate FM and AM signals again within different but still limited frequency ranges.

3,561,462

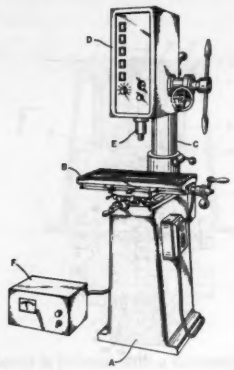
ULTRASONIC DRIVE ASSEMBLY FOR MACHINE TOOL

John Jugler, Danbury, Conn., assignor to Branson Instruments, Incorporated, Stamford, Conn., a corporation of Delaware

Filed Oct. 10, 1969, Ser. No. 865,381
Int. Cl. E21b *27/00;* **B24b** *1/00*
U.S. Cl. 173—57 **12 Claims**

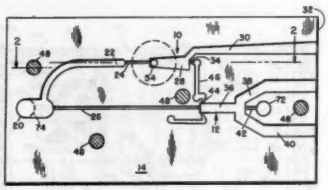
An ultrasonic drive assembly comprises a shaft which while rotating is caused to be resonant along its axis at a sonic or

ultrasonic frequency by piezoelectric means. A set of antifriction bearings is mounted on the shaft at nodal regions



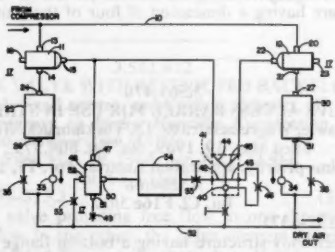
using liners for providing acoustic decoupling. The liners are made of compliant nonresilient material to minimize tool runout.

3,561,463
CONTROL DEVICE
Basil B. Beeken, New Haven, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn., a corporation of Delaware
Filed Sept. 12, 1968, Ser. No. 759,440
Int. Cl. F15c *1/18*
U.S. Cl. 137—81.5 **1 Claim**



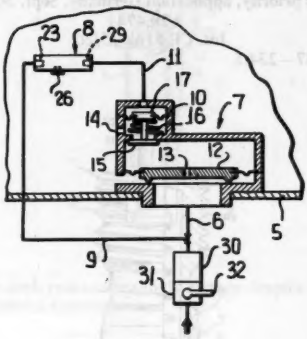
A sonically sensitive fluid amplifier that has a thin plastic film or membrane stretched across the control line thereof whereby sonic control signals can effectively pass through said control line but foreign particles and contaminates are blocked from entry through said line into the fluid amplifier.

3,561,464
FLUIDIC CONTROL APPARATUS
Neil C. Sher, and John M. Zabsky, Minneapolis, Minn., assignors to Honeywell Inc., Minneapolis, Minn., a corporation of Delaware
Filed Oct. 22, 1968, Ser. No. 769,572
Int. Cl. F15c *3/00*
U.S. Cl. 137—81.5 **6 Claims**



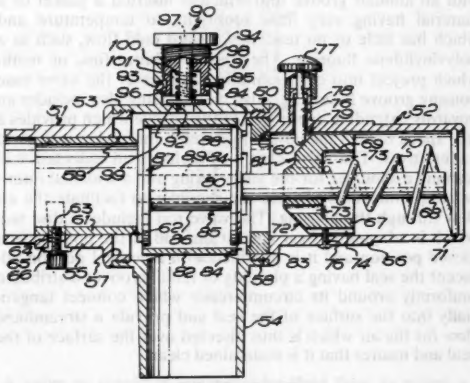
An air-drying arrangement with fluidic apparatus for controlling the cyclic operation of the device and powered from the air line rather than from any auxiliary electrical or other source, and the fluidic apparatus itself.

3,561,465
JET LEVEL SENSOR
Paul A. de Graaf, Los Angeles, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio, a corporation of Ohio
Filed May 7, 1969, Ser. No. 822,403
Int. Cl. F15c *1/14*
U.S. Cl. 137—81.5 **7 Claims**



This disclosure relates to a sensor for operating a flow control valve pilot. The sensor incorporates a jet which is interrupted by rising liquid within a container and includes an aspirator for picking up liquid and deflecting the jet to render same ineffective.

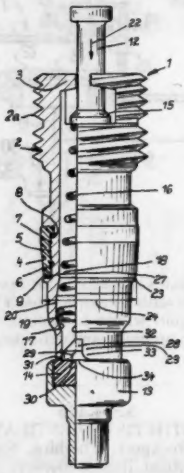
3,561,466
ANESTHETIST'S VENTILATOR
Edward Carden, Stockport, Cheshire, England (Cavendish House, Priestnall Road, Heaton Mersey)
Filed Jan. 8, 1968, Ser. No. 700,668
Int. Cl. A61m *17/00*
U.S. Cl. 137—102 **10 Claims**



An anaesthetist's ventilator in the form of a valve comprising a body having a gas inlet connection for connecting to anesthetic equipment, a breathing connection for enabling a patient to breathe through the valve and an outlet to atmosphere, a valve member, and biassing means biassing the valve member to a fixed rest position in the body wherein it closes the gas inlet connection and opens the breathing connection to the outlet, the valve member being adapted, upon buildup of pressure at the gas inlet connection momentarily to be displaced against the action of the biassing means to open the breathing connection to the gas inlet connection

and at least partially close the outlet, and then, as a result of consequential lowering of the pressure at the gas inlet connection, and increase in pressure in the breathing connection to return to its rest position.

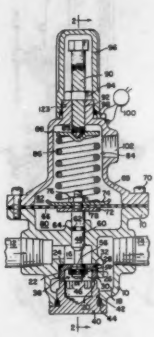
3,561,467
VALVE CASE CONSTRUCTION
Sepp Lutz, Giengen (Brenz), Germany, assignor to Alligator Ventilfabrik Gesellschaft Mit Beschrankter Haftung, Giengen, Germany
Filed Sept. 25, 1968, Ser. No. 762,423
Claims priority, application Germany, Sept. 30, 1967, A28,474
Int. Cl. F16k *15/20*
U.S. Cl. 137—234.5 **7 Claims**



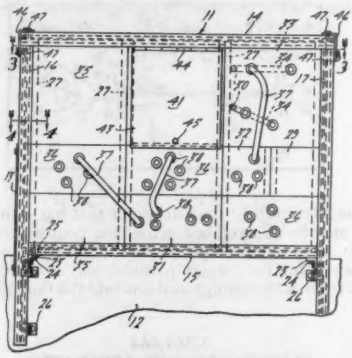
A valve case construction particularly for use for tire valves includes a tubular housing having an exterior surface with an annular groove into which is inserted a gasket of a material having very little sensitivity to temperature and which has little or no tendency toward cold flow, such as a polyvinylidene fluoride. The gasket includes fins, or teeth, which project into corresponding recesses of the valve case housing groove base. The valve case housing also includes an inwardly extending depression in the groove which provides a free space behind the gasket into which the gasket may yield under stress. The valve case also includes an indented wall forming a shoulder for the valve spring and a widened interior area immediately before the shoulder to facilitate the air flow through the housing. The valve rod includes a disc seal which is adapted to bear against the end of the housing in a closed position and it is provided with a conical portion adjacent the seal having a plurality of radial grooves distributed uniformly around its circumference which connect tangentially into the surface of the seal and provide a streamlined flow for the air which is thus directed over the surface of the seal and insures that it is maintained clean.

3,561,468
UNIVERSAL CONTROL VALVE
Harry Sugden, Jr., Statesboro, Ga., assignor to Emerson Electric Co., St. Louis, Mo., a corporation of Missouri
Filed Oct. 18, 1968, Ser. No. 768,834
Int. Cl. F16k *51/00*
U.S. Cl. 137—269 **11 Claims**

A universal control valve capable of performing several different control functions including those of a pressure reducing valve, a relief valve, and/or a normally open or normally closed pressure differential control valve. The respective control functions are accomplished merely by reassembling the valve components in various possible structural arrangements. The valve may also be used as a pilot valve causing a larger main valve to perform the same control functions as that provided by its own structural assemblage.



3,561,469
MODULATED FLUID CONTROL PANEL BOARD
William H. Kellstrom, 2303 Playview, St. Clair Shores; John F. Peters, 656 Perrien Place, Grosse Pointe Woods, and Philip Parrino, 20307 Yale, St. Clair Shores, Mich. 48081
Filed Jan. 14, 1969, Ser. No. 790,980
Int. Cl. F16l *5/00;* **F16d** *1/00*
U.S. Cl. 137—343 **8 Claims**

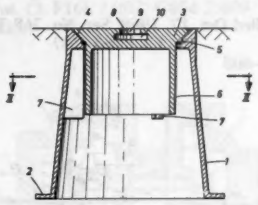


The panel board is made of modulated panel sections which interlock with each other and a frame in which the panel sections are removably retained to form a unit construction. The panel sections are the multiple of a unit which in the illustration example is square so that the panel section can be a rectangle having the dimension of two of the units or a square having a dimension of four of the units and the like.

3,561,470
VALVE ACCESS BARREL FOR USE IN STREETS
Erwin Hawle, Wagreinerstrasse 13, Vocklabruck, Austria
Filed Mar. 19, 1969, Ser. No. 808,579
Claims priority, application Austria, Apr. 11, 1968, A3564/68
Int. Cl. F16e *5/00*
U.S. Cl. 137—371 **6 Claims**

A barrel body structure having a bottom flange and open top and bottom ends has detachably connected to it a cover closing said barrel body structure at said top end thereof. A pilot extension is carried by said cover and depends into said

barrel body structure and engages the same. The cover has a largest outside diameter which is smaller than the outside diameter of said barrel body structure at said top end

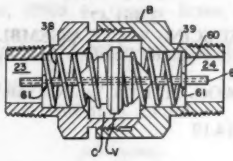


thereof. Said cover is formed with a downwardly facing, conical seat face. The barrel body structure is formed with an upwardly facing, conical seat face in mating engagement with said seat face of said cover.

3,561,471
SAFETY VALVE

Asa D. Sands, 3606 Federal St., Camden, N.J. 08105

Continuation-in-part of application Ser. No. 637,714, May 11, 1967, now abandoned. This application Oct. 29, 1968, Ser. No. 771,595
Int. Cl. F16k *17/24*
U.S. Cl. 137—498 **3 Claims**



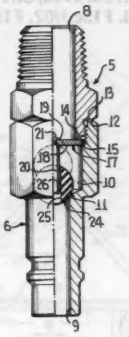
A valve body defining a chamber with coaxial valve ports and valve seats on the ports facing the chamber. A valve member is movable axially in the chamber into engagement with either of the seats. The valve member is supported in the chamber, normally centrally between the seats, by a pair of coil springs which are seated in the valve ports and on opposite sides of the valve member. In some embodiments additional support of the valve member is provided by a rod extending axially through the valve member and having its end portions slidably journaled in bearing means provided in the valve ports. A fluid bypass from one port to the other is provided, either in the valve body or axially through the valve member.

3,561,472
CHECK VALVE WITH RESTRICTED BACKFLOW

Ted L. Lamb, San Lorenzo, and Chris O. Schmitz, III, Alamo, Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio, a corporation of Ohio

Filed May 29, 1968, Ser. No. 732,966
Int. Cl. F16k *15/14*
U.S. Cl. 137—513.3 **13 Claims**

A check valve providing free flow in one direction and restricted flow in the other, the valve element being a ball and the restricted flow passing through a clearance between a bore through the ball and a stem upon which the ball is slidably mounted, the stem being carried by a spider that is deformably gripped between clamping shoulders on separably connected housing parts so as to permit other

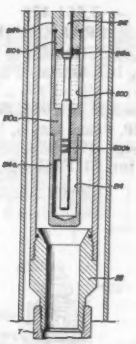


shoulders on such parts to sealingly engage despite manufacturing dimensional inaccuracies.

3,561,473
VALVE SEAL APPARATUS

David V. Chenoweth, Houston, Tex., assignor to Baker Oil Tools, Inc., City of Commerce, Calif., a corporation of California

Original application July 14, 1967, Ser. No. 653,372, now Patent No. 3,474,859, dated Oct. 28, 1969. Divided and this application Sept. 5, 1968, Ser. No. 757,688
Int. Cl. F16k *39/02*
U.S. Cl. 137—542 **3 Claims**

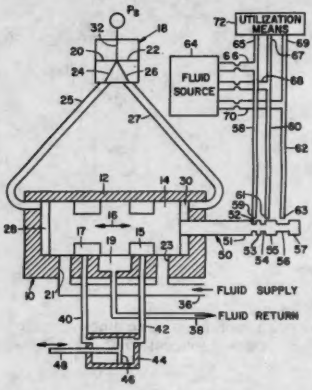


A valve or regulator apparatus for fluid flow, in which a pressure differential shifts the valve to different positions, one portion of the valve being subject to low pressure, such as pressure in an atmospheric chamber, and the other portion of the valve being subject to relatively high pressures. A valve stem, or the like, is exposed to the atmospheric pressure in the chamber and makes a sealing fit in a guide. A seal chamber is provided containing a liquid, such as silicone oil, which is prevented from entering the atmospheric chamber by the seal between the valve stem and the guide, the silicone oil preventing the fluids under pressure, which flow through the valve, from contacting and acting upon the seal adjacent the atmospheric chamber.

3,561,474
SERVOVALVE OUTPUT FLUID VELOCITY INDICATOR

Lawrence W. Langley, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y., a corporation of New York

Filed Dec. 30, 1968, Ser. No. 787,631
Int. Cl. F15c *3/02*; F15b *13/042*
U.S. Cl. 137—557 2 Claims

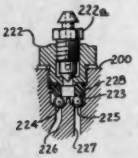


A system for providing digital fluidic signals which are indicative of the velocity of hydraulic fluid flowing through a servovalve. A shaft connected to the servovalve spool has a plurality of slots therein which are disposed adjacent to a plurality of back pressure sensors. Different locations of this spool cause correspondingly different digital fluidic signals to be generated by the back pressure sensors.

3,561,475
DUAL HYDRAULIC BRAKE SYSTEMS AND BRAKE BOOSTER MECHANISMS THEREFOR

Edward A. Rockwell, 167 Ashdale Place, Los Angeles, Calif. 90049

Original application Apr. 5, 1966, Ser. No. 540,308, now Patent No. 3,442,080, dated May 6, 1969. Divided and this application Sept. 19, 1968, Ser. No. 800,298
Int. Cl. F16k *15/18*
U.S. Cl. 137—606 1 Claim

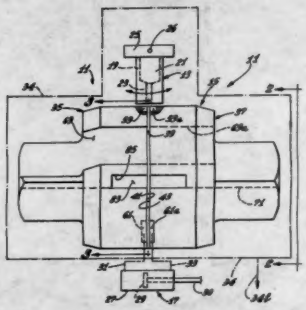


A bleeder valve assembly for a dual hydraulic brake system having dual hydraulic lines with independent fluid reservoirs. The bleeder valve assembly includes a hydraulic chamber communicating with both of the hydraulic lines, and containing a primary valve element for controlling the bleeding of hydraulic fluid from the dual lines via the chamber. A pair of secondary valve elements are mounted within the chamber, each cooperating with one of the dual hydraulic lines. A rubber grommet biases both of the secondary valve elements against the fluid pressure in the dual hydraulic lines, and a bleeder screw is associated with the grommet to control the bleeding of fluid from the lines into the chamber.

3,561,476
VALVE

Harold Mandroian; Chandler A. Phillips, La Canada, and William D. Wilkerson, Santa Ana, Calif., assignors to Bertea Corporation, Irvine, Calif., a corporation of California

Filed Oct. 17, 1968, Ser. No. 768,381
Int. Cl. F16d *1/00*
U.S. Cl. 137—608 18 Claims

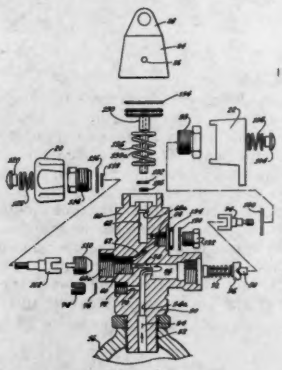


This disclosure describes a valve including a movable jet pipe, a receiver and a pressure responsive member. Fluid is supplied to the discharge end of the jet pipe and through first and second passages in the receiver to the fluid pressure responsive member. The receiver provides first and second outlet passages connected to the first and second passages, respectively, for returning fluid from the pressure responsive member.

3,561,477
REDUCING VALVE ASSEMBLY

Olympio F. Pinto, Praia de Botofogo 114, Apt. 602, Rio De Janeiro, Brazil

Filed Oct. 11, 1968, Ser. No. 766,788
Int. Cl. A62b *9/02*
U.S. Cl. 137—614.19 4 Claims



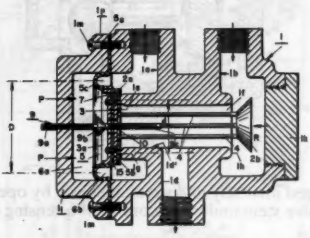
The invention is concerned with an improved on-off valve and reducing valve unit for use, for example, in underwater diving equipment, and which is interposed between the air hose from the face mask and the high-pressure air cylinder which is carried by the diver. The unit includes a manually controllable on-off valve, and an internal regulator which causes air at a predetermined regulated reduced pressure to be produced at the outlet of the unit and through the air hose to the face mask in response to the high-pressure air from the interior of the air cylinder.

3,561,478

COMPACT SERVO-CONTROLLED FLUID MIXING VALVE

John F. Taplin, 15 Sewall St., West Newton, Mass. 02165

Filed Sept. 23, 1966, Ser. No. 581,508
Int. Cl. F16k *11/02*; G05d *23/00*
U.S. Cl. 137—625.4 12 Claims



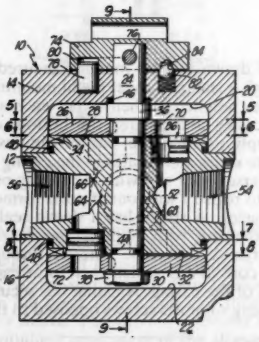
A servo-controlled dual fluid mixing valve is provided with a fluid motor having a cylinder which is subdivided by a dual function partition into two chambers. This partition is adapted to operate both as a valve element and as the piston of a fluid motor. The dual function partition is provided with two transverse control passageways of which one admits fluid to the cylinder of the fluid motor to cause movement of the piston in one direction, and the other transverse control passageway dumps fluid from the cylinder of the fluid motor to cause movement of the piston—or of a structure operating as a piston—in the opposite direction.

3,561,479

NONINTERFLOW ROTARY VALVE AND IMPROVED FLUID SEALS

Lyle J. Archer, 10808 E. Orange Drive, Whittier, Calif. 90606

Filed Aug. 12, 1968, Ser. No. 751,928
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.21 15 Claims



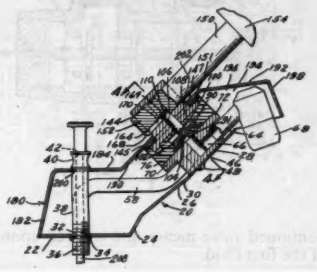
A housing has upper and lower pressure chambers separated by a housing central portion, each chamber containing a pivotal rotor adjacent the central portion. The housing central portion has first and second ports, each opening into both chambers against the rotors, a third port opening only into the upper chamber and a fourth port opening only into the lower chamber. Each rotor has two ports therethrough so that in alternate positions, the upper rotor ports communicate with the central portion third port and alternately with the central portion first and second ports, while the lower rotor ports communicate with the central portion fourth port and alternately with the central portion second and first ports. The rotors are connected simultaneously pivotal and spool seals are mounted in the ends of the central portion ports against the rotors permitting such rotor pivoting.

3,561,480

FLUID MIXING APPARATUS

Wayne K. Fairchild, 1106 S. Pacific Ave., Santa Ana, Calif.

Filed May 27, 1968, Ser. No. 732,124
Int. Cl. F16k *11.00*
U.S. Cl. 137—625.4 11 Claims



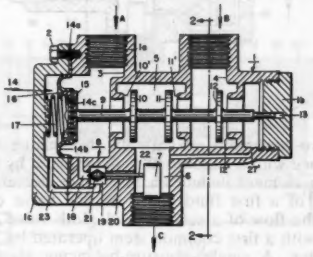
A mixing apparatus for controlling the mixing of hot and cold water and controlling the volume of discharge of the mixture water. A single control lever provides accurate adjustment of both the temperature of the mix and the amount or volume of the water discharged.

3,561,481

FAIL-SAFE SERVO-CONTROLLED MIXING VALVE

John F. Taplin, 15 Sewall St., West Newton, Mass. 02165

Original application Nov. 7, 1966, Ser. No. 597,192, now abandoned. Divided and this application Apr. 15, 1969, Ser. No. 816,228
Int. Cl. F16k *11/07, 31/165, 19/00*
U.S. Cl. 137—625.4 3 Claims



A fail-safe servo-controlled mixing valve is provided with a spring means to render it fail-safe, and with another or auxiliary fluid-pressure-operated means to render it fail-safe should the fail-safe spring means fail to properly function.

3,561,482

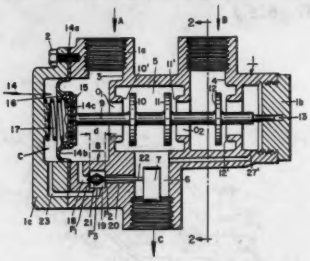
FAIL-SAFE SERVO-CONTROLLED MIXING VALVE

John F. Taplin, 15 Sewall St, West Newton, Mass. 02165

Continuation of application Ser. No. 597,192, Nov. 7, 1966, now abandoned. This application June 23, 1969, Ser. No. 838,034
Int. Cl. F16k *11/02, 19/00*
U.S. Cl. 137—625.4 3 Claims

A fluid mixing valve has a nonforce-balanced, or nonpressure-compensated, valve means controlling the flow of a first fluid and a force-balanced, or pressure-compensated, valve means controlling the flow of a second fluid. The thrust to which the first mentioned valve means is subjected by the first fluid and the thrust of a fail-safe biasing means acting in

the same direction are balanced by the partition of a fluid servomotor whose effective area exceeds the effective area of the first mentioned valve means and is acted upon by the full pressure of the first fluid.



3,561,483

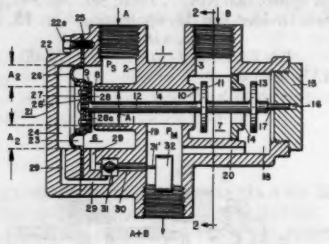
DUAL FLUID MIXING VALVE WITH SERVOMOTOR

John F. Taplin, 15 Sewall St., West Newton, Mass. 02165

Continuation of application Ser. No. 596,911, Nov. 25, 1966, now abandoned. This application Aug. 6, 1969, Ser. No. 849,592

Int. Cl. F16k *11/02, 19/00*

U.S. Cl. 137—625.4 **4 Claims**



A servo-controlled mixing valve for mixing two fluids in accordance with a variable ratio determined by the action of a sensing element includes a first valve element controlling the flow of a first fluid and a second valve element controlling the flow of a second fluid. Both valve elements are integral with a first common stem operated by a single fluid servomotor. A single pressure-balancing element integral with said first stem is under the action of said second fluid and precludes the transmission by the intermediary of said first stem of forces resulting from the action of said second fluid upon said second valve element to a partition of said single fluid servomotor. The forces resulting from the action of said first fluid upon said first valve element are transmitted to said partition of said single fluid servomotor by the intermediary of said first stem. The aforementioned fluid servomotor is operated by said first fluid and its operation is controlled by means which are a fluid equivalent of a voltage divider thus enabling to supply the fluid servomotor with any pressure down from the full supply pressure of said first fluid.

3,561,484

SERVO-CONTROLLED DUAL FLUID MIXING VALVE

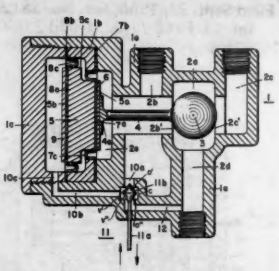
John F. Taplin, 15 Sewall St., West Newton, Mass. 02165

Continuation of application Ser. No. 564,383, July 11, 1966, now abandoned. This application Sept. 12, 1969, Ser. No. 857,599

Int. Cl. F16k *11/00*

U.S. Cl. 137—625.4 **7 Claims**

A servo-controlled mixing valve for mixing two fluids in a variable ratio is operated by a fluid motor having fluid admission means and fluid dumping means which are jointly controlled by dual action servovalve means, the effective area of the fluid admission means and of the fluid dumping means being changed inversely and simultaneously by operation of a common valve stem under the control of a sensing element.



3,561,485

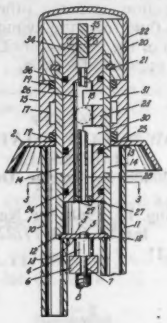
MIXING FAUCET USING DRAWN METAL PARTS

Hughlin E. Klingler, 223 Arcade Ave., Elkhart, Ind. 46514

Filed Dec. 30, 1968, Ser. No. 787,792

Int. Cl. F16k *11/07*

U.S. Cl. 137—625.17 **9 Claims**



A casing of drawn tubular metal is secured in projecting relation through a stamped sheet metal mounting ring. Tubular supply pipes notched at their upper ends are soldered to sides of the casing and against the bottom of the ring to deliver to supply ports in the side of the casing. A hollow cylindrical core slides and rotates in the casing to variably register a transverse lower slot with the supply ports. An upper slot moved into registry with outlet ports formed through the sides of the casing. A spigot has a sleeve sealed around the casing above the ring, with an outlet groove registering with the outlet ports. A vent tube extends through the hollow center of the core and is sealed thereto at each end to vent the lower end of the casing. A clamp bar secured to the bottom of the casing supports screws opposed to the clamp ring.

3,561,486

PNEUMATIC PROGRAMMING MEANS AND THE LIKE

Roland D. Beck, Anaheim, and Harold W. Rice, Fullerton, Calif., assignors to Robertshaw Controls Company, Richmond, Va., a corporation of Delaware

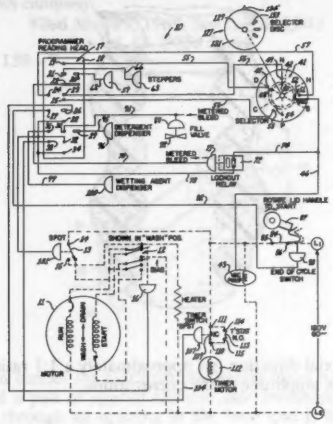
Original application Mar. 4, 1965, Ser. No. 437,169, now Patent No. 3,417,663, dated Dec. 24, 1968. Divided and this application July 17, 1968, Ser. No. 763,446

Int. Cl. G05b *19/44*

U.S. Cl. 137—624.18 **7 Claims**

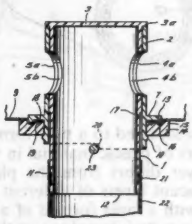
This disclosure relates to a program member that is rotated relative to a reading head to fluidly interconnect together various ports interrupting the reading surface of the reading head by a timer motor and that is rapidly rotated relative to the reading head by a pair of pneumatically operated actuators to override the timer motor with such overriding actuators being controlled by the program member itself, the dis-

closure also relating to a selector valve being mounted on the same plate that forms the reading head and to various shapes



and combinations of channel means formed in the program member for interconnecting various ports of the reading head together.

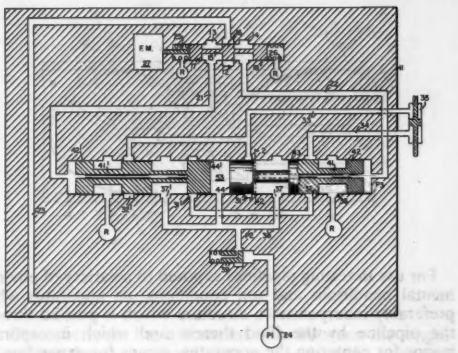
3,561,487
ROTARY VALVE WITH SNAP RING CONNECTOR
Thomas G. Reed, Jr., 818 Heather Court, Houston, Tex.
Filed Dec. 29, 1966, Ser. No. 605,785
Int. Cl. F16k *5/18, 11/07*
U.S. Cl. 137—625.32 **6 Claims**



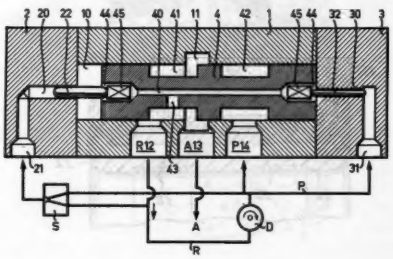
A rotary valve having an inner cylindrical sleeve, an outer cylindrical sleeve in sealing contact with the inner sleeve, the inner sleeve being closed by a wall closure at one end, and openings in the sleeve surfaces to allow liquids to enter the chamber inside the inner sleeve and exit through the open end of the inner sleeve. The valve is provided with elements to prevent longitudinal movement of the sleeves, an element to rotate the openings into and out of coincidence, and a snap-ring-flange combination to facilitate engagement with a containing surface.

3,561,488
FLUID FLOW CONTROL VALVE
James Otto Byers, Manchester, N.H., assignor to Sanders Associates, Inc., Nashua, N.H., a corporation of Delaware
Filed July 1, 1969, Ser. No. 838,062
Int. Cl. F16k *11/07*
U.S. Cl. 137—625.62 **27 Claims**

A two-stage fluid flow control valve is described in which the rate of flow of fluid to the load depends solely on the input signal and is independent of load pressure. The second stage spool and housing are formed so that upon movement of the spool in response to fluid pressure from the first stage, two different-sized passageways are opened simultaneously to the load conduit. The smaller communicates with the second-stage fluid pressure source. Analysis shows that this results in a fixed flow rate for each value of input signal.

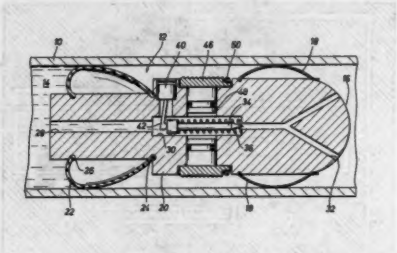


3,561,489
HYDRAULICALLY OR PNEUMATICALLY CONTROLLABLE SLIDE VALVE ARRANGEMENT
Eduard Furrer, Zurich, Switzerland, assignor to Contraves AG., Zurich, Switzerland, a corporation of Switzerland
Filed Dec. 11, 1968, Ser. No. 782,936
Claims priority, application Switzerland, Dec. 22, 1967, 18132/67
Int. Cl. F16k *11/07*
U.S. Cl. 137—625.63 **7 Claims**



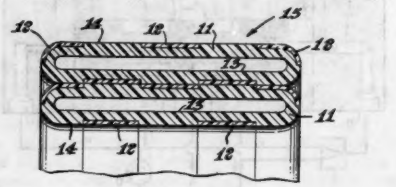
There is disclosed a fluid-operated, in particular a hydraulically or pneumatically controllable slide valve arrangement for alternately communicating in flow relationship an outflow conduit with a pressure conduit and return flow conduit of a fluid-operating system. This slide valve arrangement comprises a slide valve housing equipped with the aforesaid outflow, pressure and return flow conduits, and a sleeve valve or slide valve piston member is disposed in such slide valve housing. A respective coaxially extending displacement piston member acts upon each end face of the sleeve valve member, the effective cross-sectional area of both displacement piston members differing from one another. Additionally, there is provided fluid-operated control circuit means for continually applying a predetermined control pressure of a fluid medium to the displacement piston member possessing the smaller effective cross-sectional area and for alternately applying the control pressure of the fluid medium of the control circuit means and a considerably smaller pressure to the other displacement piston member possessing the larger effective cross-sectional area.

3,561,490
PIPELINE TESTING APPARATUS
Jewel E. Little, P.O. Box 902, Pearland, Tex. 77581
Filed Mar. 3, 1969, Ser. No. 803,543
Int. Cl. F16l 55/10; G01m 3/08
U.S. Cl. 138—90 6 Claims



For use in testing pipelines exposed to a variety of environmental conditions and soil conditions, an apparatus which preferably incorporates a structure which is pushed through the pipeline by the fluid therein and which incorporates means for centering the apparatus, means for expanding the apparatus to completely plug the pipeline, said last named means having a size which alternatively does not plug the pipeline to permit its movement, and said means holding the apparatus at a selected position while the pressure upstream from the apparatus is increased to a desired test level, and thereafter releasing to permit the apparatus to move further along the pipeline.

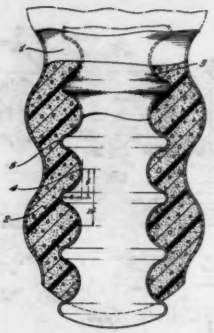
3,561,491
CONFIGURATION FOR NONSLIP PLASTIC BAG MATERIAL
Robert McFedries Jr., Bay Village, Ohio, assignor to The Dow Chemical Company, Midland, Mich., a corporation of Delaware
Filed Apr. 22, 1968, Ser. No. 723,196
Int. Cl. F16l 11/04
U.S. Cl. 138—118 6 Claims



An improved plastic shipping container of baglike configuration having adhering to one surface a nonskid material positioned at selected intervals so as to avoid "blocking" on the roll during manufacturing operations.

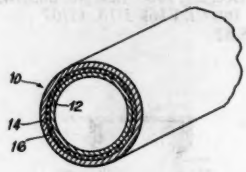
3,561,492
FLEXIBLE LIQUID CONDUIT
Knut Kauder, Hannover, and Herbert Bittner, Krahenwinkel, Germany, assignors to Kabel-und Metallwerke, Gutehoffnungshutte, Hannover, Germany, a corporation of Germany
Filed June 3, 1968, Ser. No. 733,917
Claims priority, application Germany, June 6, 1967, K62,485
Int. Cl. F16l 11/12, 59/00
U.S. Cl. 138—121 3 Claims

This application discloses a corrugated pipe with folds and ridges extending around the axis and alternating along the axis. The radius of curvature of the flow-throttling folds is larger than the radius of curvature of the adjacent corrugation ridges, and half of the peak-to-peak distance of folds (or



ridges) in axial direction has approximately a 1:1 ratio to the fold-to-ridge amplitude of the corrugations.

3,561,493
COMPOSITE TUBES AND METHOD OF MANUFACTURING SAME
Paul Maillard, 16 Boulevard Sebastopol, Paris, 2 ieme, and Michel Rebeyrolle, rue des Ponts, Vienne le Chateau, Marne, France
Filed Apr. 21, 1965, Ser. No. 449,874
Int. Cl. F16l 9/14, 11/04
U.S. Cl. 138—141 6 Claims



This invention is addressed to a tube formed of a plurality of interbonded layers of plastic material in which the plastic material in one layer differs from the plastic material in others with the adjacent layers of different plastic materials being interbonded with a layer formed of a precompounded mixture of the plastic materials making up the adjacent layers and extruded between said layers.

3,561,494
CASTABLE SILICATE COMPOSITIONS, CASTING METHODS AND ARTICLES PRODUCED THEREBY
Robert J. Hackett, Cross Road, Brookfield, Conn. 06804
Filed Mar. 4, 1968, Ser. No. 710,316
Int. Cl. F16l 9/10
U.S. Cl. 138—177 8 Claims

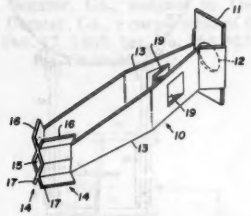
Castable compositions including soluble or colloidal silicates as binding agent. The composition is cast as an aqueous slurry in a mold coated with a reagent for precipitating the silicate, to prevent penetration of silicates into the mold surface. A lightweight, expandable, refractory tube having excellent resistance to thermal shock is produced.

3,561,495

YARN CARRIER FOR GRIPPER AXMINSTER LOOM

John Alexander Charles, Blaby, Leicestershire, England, assignor to Monsanto Textiles Limited, London, England, a British company

Filed May 29, 1969, Ser. No. 828,843
Int. Cl. D03d 39/00
U.S. Cl. 139—7 3 Claims



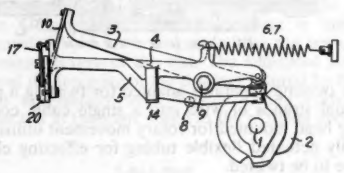
A yarn carrier for a gripper Axminster loom having a flat base and a pair of spaced resilient side members. The yarn extends through an opening in the base and is held by the cooperating ends of the side members.

3,561,496

DEVICE FOR BINDING WEFTS ON A SHUTTLELESS LOOM

Maxime Guallo, Bourgoin-Jallieu, France, assignor to Ateliers Diederichs, Bourgoin-Jallieu, Isere, France, a company of France

Filed Dec. 31, 1968, Ser. No. 788,140
Claims priority, application France, Jan. 18, 1968, 49,538
Int. Cl. D03d 47/40
U.S. Cl. 139—54 8 Claims



In a shuttleless loom a device is provided for binding weft ends by a leno shed working on at least one "straight" thread and at least one cross thread per "straight" thread. The crossing of the threads is effected by three levers all actuated by an independent, single, triple action cam, coordinated to operate the binding as a function of the time of arrival of the end of the weft with respect to the crossing of the warp yarns. Two levers are hinged to a fixed common axis and the third lever is hinged to one of said two levers. The first lever controls one or more "straight" threads, the second lever controls the dip of one or more cross threads and the third produces a reverse motion between the cross threads.

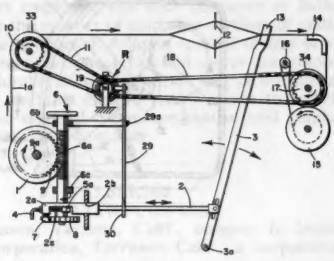
3,561,497

LOOM

Omer Vandoolaeghe, Comines, Belgium, assignor to Roger Decramer, Wervik, Belgium

Filed Sept. 3, 1968, Ser. No. 756,903
Claims priority, application Belgium, Sept. 4, 1967, 703,433
Int. Cl. D03d 49/06, 49/20
U.S. Cl. 139—99 3 Claims

A loom having a warp letoff mechanism with a warp beam, a fabric takeup device with a pulling cylinder, a batten, a transmission positively driving the warp beam from the batten, and a regulator responsive to the difference between the speed of the thread being unwound from the warp beam and the speed of the pulling cylinder and acting on the transmission. Thus the loom has a constant ratio between the length of the fabric being produced and the length of the unwound warp from the warp beam.

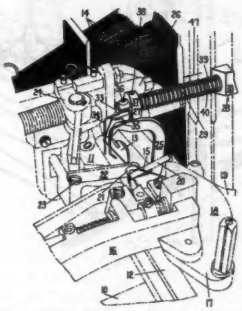


3,561,498

LOOM FRINGE MOTION

Stanley C. Tiernan, Bellingham, Mass., assignor to North American Rockwell Corporation, Pittsburgh, Pa., a corporation of Delaware

Filed Jan. 21, 1969, Ser. No. 792,594
Int. Cl. D03d 47/34
U.S. Cl. 139—116 6 Claims



A fringe motion for looms of the shuttleless type adapted to selectively control the omission of a number of picks during loom operation to produce, in continuance of normal weaving, nonwoven bands of warp yarns of a predetermined width.

3,561,499

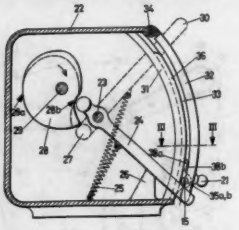
WEFT STORAGE MOTION AND MEASURING DEVICE FOR WEAVING MACHINES

Erich Walter Hortmann, Schotten, Germany, assignor to Georg Fischer Ltd. Brugg, Brugg, Switzerland

Filed Jan. 23, 1969, Ser. No. 793,521
Claims priority, application Switzerland, Feb. 16, 1968, 2288/68
Int. Cl. D03d 47/34
U.S. Cl. 139—122 8 Claims

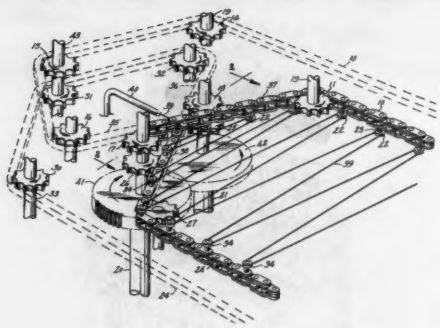
The invention pertains to a weft storage motion and pick measuring device for weaving machines for taking off weft periodically from stationary supply packages with at least one

loop former positioned between a supply package and point of weft insertion and acting substantially at right angles to the



travel of weft yarn (in that section) and actuatable in synchronism with the weft insertion itself.

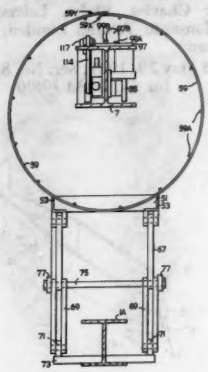
3,561,500
WIRE-FORMING APPARATUS AND METHOD
John Clifton Rentz, Salfords, England, and William B. Williams, King of Prussia, Pa., assignors to General Electric Company, a corporation of New York
Filed Sept. 30, 1968, Ser. No. 763,725
Int. Cl. B21f *1/04*
U.S. Cl. 140—71 **7 Claims**



This disclosure concerns forming wire into a serpentine pattern by means of two driven belts, each having a plurality of spaced apart projections for temporarily retaining the wire, which wire is engaged by the projections on one moving belt then the other in an alternating manner and then directing the belts away from each other after the wire is engaged thereby forming the serpentine pattern.

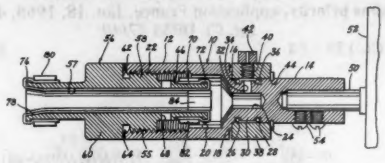
3,561,501
CRIMPING OF WIRE REINFORCING BASKETS
Denis Fauteux, 8426 Riverside Drive, Windsor, Ontario, Canada
Filed Feb. 3, 1969, Ser. No. 796,049
Claims priority, application Canada, Dec. 13, 1968, 037,735
Int. Cl. B21f *15/04*, *33/00*
U.S. Cl. 140—107 **13 Claims**

A machine for fabricating from wire mesh a cylindrical wire basket for use in reinforcing spun concrete pipes. The machine bends over circumferentially extending wires of the mesh about one of the longitudinal wires of the mesh to link



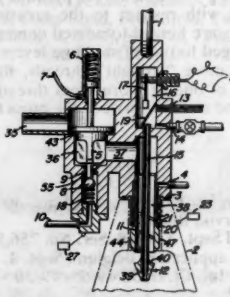
the overlapping edges of the web. The machine obviates the need to weld the overlapping wires.

3,561,502
WIRE TWISTING APPARATUS
Ralph H. Swaisgood, Fort Collins, Colo., assignor to Storm Products Company, Los Angeles, Calif., a corporation of California
Filed Mar. 10, 1969, Ser. No. 805,545
Int. Cl. B21f *7/00*
U.S. Cl. 140—115 **10 Claims**



Wire twisting apparatus adapted for twisting a plurality of individual strands of wire into a single cable comprising a twisting head mounted for rotary movement utilizing a pneumatically actuated flexible tubing for effecting clamping of the wire to be twisted.

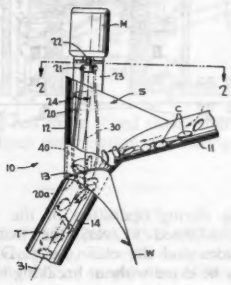
3,561,503
LIQUID FILLING HEAD
Bernhard Rogge, Baldwin, Md., assignor to the United States of America as represented by the Secretary of the Army
Filed June 3, 1968, Ser. No. 734,031
Int. Cl. B65b *3/26*
U.S. Cl. 141—7 **23 Claims**



An improved system, apparatus, and method of filling containers with liquid comprising a reservoir means, electronic

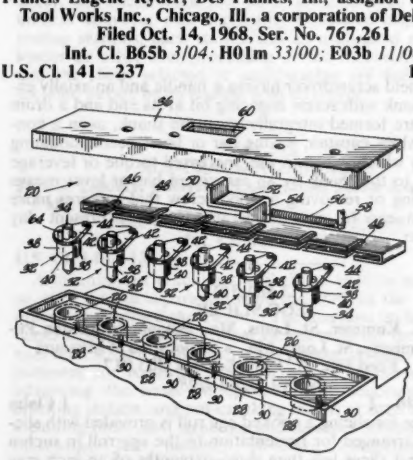
sequencing means, conduit means, and a plurality of valve means wherein the improvement is a filling head means having a plurality of chamber members, a novel valve means adjacent to an inlet means, means to avoid overflow, means to avoid drip, and an electric means to interrupt liquid flow.

3,561,504
PRODUCT FILLING SYSTEM
Jack B. Tanner, Decatur, Ga., assignor to The Woodman Company, Inc., Decatur, Ga., a corporation of Georgia
Filed Oct. 17, 1968, Ser. No. 768,343
Int. Cl. B65b *1/20*
U.S. Cl. 141—11 **13 Claims**



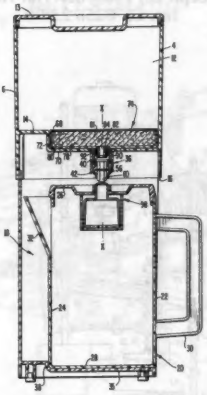
An apparatus and method are disclosed for filling a package having an upwardly extending open mouth to prevent jam-up and breakage of the product. An arcuately shaped rod is moved in a rotary path in the mouth to cause the product to have a positive whirlpool action and induced spiraling in order to seek the best orientation to enter the package. The tip of the rod is positioned along the centerline of the rotary path and the centerline of the package to provide a full sweep within the vortex pattern and allow maximum space for entrance around the package for the spiraling product. Gentle agitation of the product to break up lumps is provided by a tortuous path within the vortex pattern and limited flexure of the rod. The whirlpool action is enhanced and the integrity of the product insured by feeding the product tangentially with respect to the vortex and operating the rod at the same speed as the merging product.

3,561,505
LIQUID CONTROL DEVICE FOR CONTAINERS
Francis Eugene Ryder, Des Plaines, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill., a corporation of Delaware
Filed Oct. 14, 1968, Ser. No. 767,261
Int. Cl. B65b *3/04;* **H01m** *33/00;* **E03b** *11/00*
U.S. Cl. 141—237 **11 Claims**



This invention relates generally to devices for controlling the delivery of liquid to a container and more particularly to liquid controlling devices adapted for use with storage batteries and the like. The devices herein illustrated contemplate a container cover having, in association therewith, a plurality of laterally spaced, elongate, liquid level indicators for association with conventional battery apertures. The number of level indicators employed with each container or battery is determined by the number of container sections or cells with which they are to be used. A liquid conduit or tray serves to direct liquid received from an external source contemporaneously to the plurality of areas in the vicinity of the indicators, and manually shiftable closure means serves to selectively open and close external communication of said conduit or tray with an associated container.

3,561,506
WATER PURIFIER
Allan B. Johnson, Tarzana, Calif., assignor to Industrial Molding Corporation, Torrance, Calif., a corporation of California
Filed Aug. 9, 1968, Ser. No. 751,496
Int. Cl. B67d *5/00*
U.S. Cl. 141—360 **8 Claims**

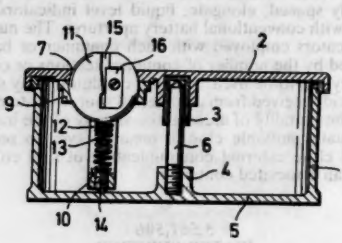


A liquid dispensing unit which includes a housing having a reservoir for unfiltered water. A receptacle is releasably connected with the housing. Whenever the receptacle is connected with the housing, liquid is automatically caused to flow from the reservoir into the receptacle until a predetermined liquid level therein is exceeded at which time further liquid flow is automatically terminated. Means are also provided for automatically preventing liquid flow from the reservoir whenever the receptacle is not connected with the housing.

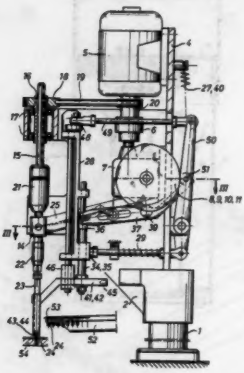
3,561,507
SHARPENING DEVICE FOR A WRITING ELEMENT
Peter Dziuk, Nurenberg, Germany, assignor to U.S. Staedtler, Nurenberg, Germany, a firm
Filed Dec. 4, 1968, Ser. No. 781,112
Claims priority, application Germany, Dec. 7, 1967, St 22015
Int. Cl. B43i *23/00*
U.S. Cl. 144—28.4 **7 Claims**

A device for sharpening a writing element mounted in a holder when the writing element is inserted into an eccentric opening in the device and moved in a circular path to rotate a sharpening tool round the element. The opening is formed in a rotary part of a casing and the sharpening tool is carried

in a toolholder mounted adjacent said opening, as in a ball-and-socket joint, so that the toolholder may tilt during sharpening and so minimize the danger of breakage of said writing element but the toolholder is held against rotation with the writing element.



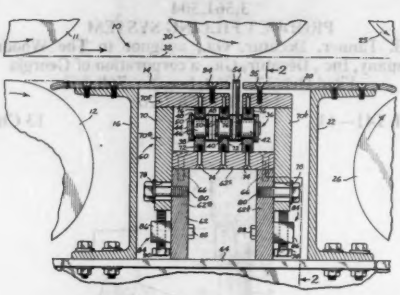
3,561,508
APPARATUS FOR AUTOMATICALLY SCREWING SCREWS INTO WORKPIECES
Friedrich Karl Holzwarth, Winnenden, Germany, assignor to Firma OkU-Automatik, Olta Kurz, Rosenstrasse, Germany
Filed Sept. 25, 1968, Ser. No. 762,414
Int. Cl. B25b *23/00*
U.S. Cl. 144—32 **2 Claims**



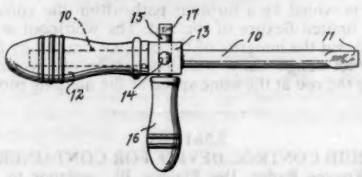
A machine for feeding one screw after another from a magazine to a point laterally adjacent to and underneath a rotating screwdriving tool, then picking up one screw by means of a pair of tongs and shifting these tongs to a position in axial alignment with the tool and a bore in a workpiece, then lowering the tool toward the workpiece so as first to insert the tip of the tool into the screw slot and to turn the screw before it engages with the workpiece and while still held in the tongs, and then starting to screw the screw into the bore, then opening the tongs and returning them to their original position ready to pick up the next screw while the first screw is fully screwed into the workpiece.

3,561,509
SURFACE TEXTURIZING APPARATUS
Roy E. Hayden, Grants Pass, Oreg., assignor to Vanply, Inc., Albany, Oreg., a corporation of Washington
Filed Nov. 25, 1968, Ser. No. 778,407
Int. Cl. B27c *1/00*
U.S. Cl. 144—123 **7 Claims**

Apparatus for producing a textured surface on a workpiece conveyed along a path, the apparatus including a continuous chain body with cutter teeth secured to and projecting outwardly from the chain body, with the cutter teeth being adapted to be drawn across the surface of the workpiece. The chain body comprises multiple side-by-side strands of endless roller chain connected to each other, and the cutter teeth are secured between adjacent strands of roller chain. Elongated opposed guides support opposite sides of each of said strands of chain in that reach of the chain body which produces cutting during operation of the apparatus. The guides may be adjusted to vary the working clearance between the guides and the chain body. Disassembly of a cutter tooth may be done without breaking the continuity of the chain body.



3,561,510
SCREWDRIVER WITH TORQUE AMPLIFYING MEANS
Peter F. Johnson, 155 Alvarado St., Brisbane, Calif. 94005
Filed Oct. 9, 1968, Ser. No. 766,141
Int. Cl. B25b *15/02*
U.S. Cl. 145—50 **2 Claims**

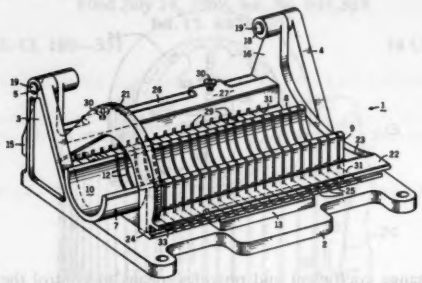


A handheld screwdriver having a handle and an axially extending shank with screw engaging bit at its end and a drum head feature formed integrally upon the shank, as in a conventional ships capstan, having bar or lever accommodating sockets by which, when in use, increased torque or leverage is applied to the shank by an associated bar or lever means when setting or removing a wood screw that requires more force than can be exerted by the use of a present day screwdriver.

3,561,511
EGG SLICER
Charles K. Kummer, St. Louis, Mo., assignor to Ralston Purina Company, St. Louis, Mo., a corporation of Missouri
Filed Feb. 27, 1969, Ser. No. 803,017
Int. Cl. B26d *4/08*
U.S. Cl. 146—2 **1 Claim**

A device for slicing a cooked egg roll is provided with slicing wires arranged for presentation to the egg roll in such a manner that slices less than three-sixteenths of an inch may be obtained without destruction or crumbling of the egg product. The slicing wires are provided in a plane predeterminantly spaced from the pivot point of the cutting wires

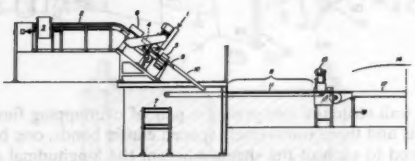
such that when the wires are presented to the egg roll, they pass therethrough with a slicing action. This slicing action permits the egg roll to be sliced closer than three-sixteenths of an inch without deformation, crumbling or squashing of the egg roll.



3,561,512
PINEAPPLE-TREATING APPARATUS

John Farmer, Honolulu, Hawaii, assignor to Ward Foods, Inc., New York, N.Y., a corporation of New York. by mesne assignment

Original application Jan. 12, 1961, Ser. No. 82,240, now abandoned. Divided and this application Apr. 15, 1968, Ser. No. 721,366
Int. Cl. A23n *15/00;* **B26d** *4/22*
U.S. Cl. 146—6 **15 Claims**



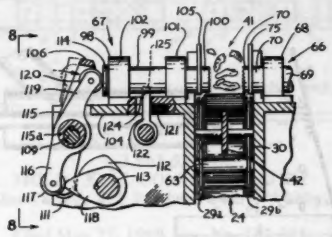
Pineapple-treating apparatus having a processing line in which pineapples are sized, end cut and cored, the resulting cylinders are conveyed by an endless conveyor to a single-cut slicer, the slices from the slicer are conveyed by a main endless conveyor past a plurality of spaced inspection and sorting stations, each station has an associated resizer, can loader or other slice-processing device removed therefrom, and the slices selected at each station are fed to the associated device by an endless feed conveyor.

3,561,513
NUT-CRACKING MACHINE

John J. Lindsey, Lafayette, Calif. (2608 Janna Ave. Modesto, Calif. 95350)

Filed May 31, 1968, Ser. No. 733,598
Int. Cl. A23n *5/02*
U.S. Cl. 146—12 **6 Claims**

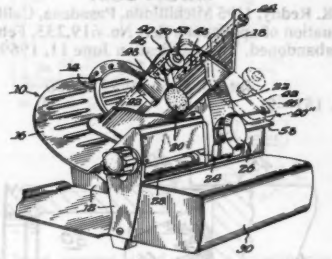
A machine for cracking the shells of walnuts and the like so as to enable separation from the shell of the nut kernel otherwise confined therewithin. The machine includes a container defining a compartment or reservoir for the receipt of nuts therewithin, conveyor means passing through such compartment for removing nuts one-by-one therefrom and for advancing the same in spaced apart succession into a cracking station, and nut-cracking means at such station and including both anvil structure and hammer structure aligned therewith. The hammer structure comprises gripper mechanism for displacing a hammer element into engagement with a nut to hold the same, in cooperation with the anvil structure, at a predetermined location, and it further comprises force applicator mechanism for imparting a displacement force of predetermined magnitude to such hammer element to cause the same to crack the shell of a nut then constrained against movement by the cooperative anvil structure.



3,561,514
SLICER COMMODITY RETAINER

Edward C. Karp, Belvidere, Ill., assignor to Sanitary Scale Company, Belvidere, Ill., a corporation of Illinois

Filed Feb. 1, 1968, Ser. No. 702,425
Int. Cl. B23d *45/18*
U.S. Cl. 146—217 **12 Claims**



Improved commodity retainer means are provided in a slicing machine of the type having a commodity feed hopper reciprocable relative to a slicing blade. The preferred retainer means include a commodity guide means such as a flat plate positionable adjacent to the commodity in the hopper and movable in the direction of feed. Tine means are mounted on the guide means for rotation in a plane perpendicular to the direction of feed and for linear penetration toward the center of mass of the commodity. The tine means include selective locking means for locking the tine means in a selected rotational position.

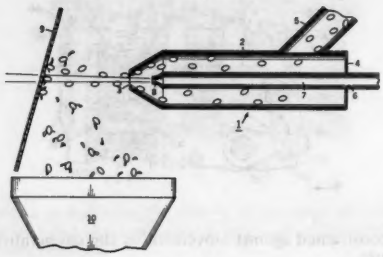
3,561,515
SOYBEAN DEHULLER

Lee J. Nahm, Jr., St. Louis, Mo., assignor to The Ralston Purina Company, St. Louis, Mo., a corporation of Missouri

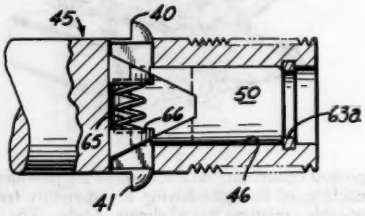
Filed Nov. 13, 1968, Ser. No. 775,275
Int. Cl. B02b *3/00*
U.S. Cl. 146—253 **1 Claim**

The hulls of soybeans are separated from the cotyledons by thrusting the soybeans into a perforated plate which serves to rupture the hulls and permit the separation of the cotyledons therefrom. This thrusting action is imparted to the soybeans by means of compressed-air flow through a nozzle to create a partial vacuum carrying the soybeans to the orifice of the nozzle and thereafter the compressed-air flow serves to expel the soybeans into a perforated plate rupturing the soybean hull and permitting the cotyledons to be separated from the hulls. The apparatus which may be used in carrying out this method of dehulling soybeans consists of a chamber having a restricted orifice through which compressed air is permitted to flow thereby creating a partial vacuum in the chamber

which is effective to permit soybeans introduced thereto to be expelled through the restricted orifice and into a perforated plate for the subsequent separation of the hulls from the cotyledons.



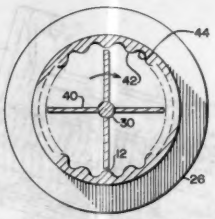
3,561,516
SAFETY BOLT
Robert R. Reddy, 1195 Michillinda, Pasadena, Calif. 91107
Continuation of application Ser. No. 619,233, Feb. 28, 1967, now abandoned. This application June 11, 1969, Ser. No. 834,231
Int. Cl. F16b *39/32, 43/00*
U.S. Cl. 151—9 **9 Claims**



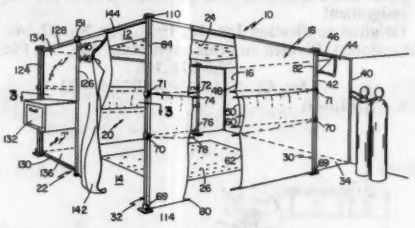
A safety bolt having a headed end, a shank, and a threaded end, with means near the threaded end to hold the bolt in a hole even though the nut may have fallen off the thread or not have been put on it in the first place. An axial passage in the threaded end intersects a laterally extending passage spaced therefrom, and a dog fills the laterally extending passage and is laterally reciprocable so as to be entirely retracted or extended beyond the maximum diameter of the shank. The dog is biased to its extended position, and carries a retraction surface to retract it as the bolt is thrust into a hole and a restraint surface to retain the bolt after the dog has passed through the hole in a workpiece. Ratchet means may be formed on the dog and on a nut threadable to the bolt so as to retain the nut on the bolt.

3,561,517
WIPED FILM PROCESSING APPARATUS WITH HEATED, CYLINDRICAL, FLUTED, INTERIOR SURFACE
James Donovan, Cambridge, and James L. Baird, Winchester, Mass., assignors to Artisan Industries, Inc., Waltham, Mass., a corporation of Massachusetts
Filed Mar. 17, 1969, Ser. No. 807,530
Int. Cl. B01d *1/22*
U.S. Cl. 159—6 **5 Claims**

In a horizontally axised wiped thin-film evaporator the evaporative surface of the processing chamber is fluted. The flutes extend from one to the other end of the chamber. This irregular evaporative surface increases significantly the heat exchange coefficient and provides means to control the residence time of the material being processed.

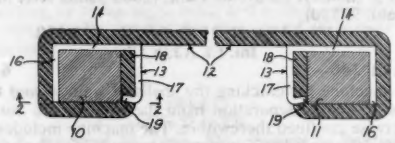


3,561,518
FLEXIBLE WALL HAVING THROUGH ACCESSIBILITY
Harold A. Johnson, Norwood, Mass., assignor to Mutron Corporation, Brockton, Mass., a corporation of Massachusetts
Filed Mar. 24, 1969, Ser. No. 809,764
Int. Cl. E06b *3/80;* **E04b** *3/08*
U.S. Cl. 160—87 **15 Claims**



A wall structure comprising a pair of overlapping flexible sheets and three transversely spaced elastic bands, one being secured to each of the sheets adjacent the longitudinal edge thereof that overlies the other of the sheets and the third being secured to one of the sheets.

3,561,519
CONNECTOR FOR METALLIC FURNITURE SUPPORT STRIPS
T. W. Tawbush, Tarrant, Ala., assignor to U.S. Plywood-Champion Paper Inc., New York, N.Y., a corporation of New York. by mesne assignments
Filed Mar. 24, 1969, Ser. No. 809,750
Int. Cl. E05d *3/48, 3/96*
U.S. Cl. 160—184 **2 Claims**



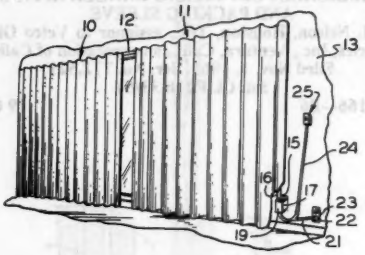
An article of furniture having side rails generally rectangular in cross section with strips of support material extending therebetween and wrapped around portions of rails. A channel-shaped clip receives a portion of rail with each terminal end of strips between and in engagement with both rail and adjacent flange of clip. Inturned projections on adjacent flange penetrate adjacent terminal end.

3,561,520

DRAPERY ACTUATOR

Robert A. Gill, 615 S.W. Country Club Road, Lake Oswego, Oreg. 97034

Filed July 14, 1969, Ser. No. 841,319
Int. Cl. A47h *5/02*
U.S. Cl. 160—331 14 Claims



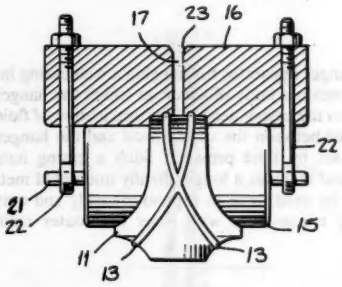
A drapery actuator, including a motor drive for a drapery pull cord, detects a closed or open limit condition for the draperies through detecting a predetermined tension condition in the pull cord. In response to predetermined tension, the motor drive is reversed for a short period for relieving the tension in the pull cord.

3,561,521

METHOD FOR CHANGING THE SIZE OF WAX RING PATTERNS

George R. Reneer, Hialeah, Fla., assignor to Micro-Thermal Applications, Inc., Hialeah, Fla., a corporation of Delaware

Filed Feb. 27, 1969, Ser. No. 803,009
Int. Cl. B29c *1/02*
U.S. Cl. 164—45 4 Claims



A method for accurately changing the inside diameter of wax patterns for finger rings. A portion of the band of the wax pattern on each side of the sprue piece is removed and a bar of the desired size is inserted in the ring. The ring and bar are affixed to mold and wax is injected through a bore hole in the mold and into the open portion of the band of the ring for completing the same. The mold has means for gripping the bar and comprises a cavity with a design therein.

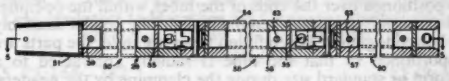
3,561,522

CONTINUOUS CASTING APPARATUS INCLUDING STARTER BAR WITH QUICK DISCONNECT SECTIONS

Leonard R. Bosold, Massillon, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio, a corporation of New Jersey

Filed June 4, 1968, Ser. No. 734,341
Int. Cl. B22d *11/08*
U.S. Cl. 164—274 5 Claims

A starter rod for continuous casting formed in a plurality of end connected sections where the sections are interconnected to form the starter rod by bayonet fittings which are of the quick assembly type. The connection fittings are constructed and arranged to provide a properly aligned rod of



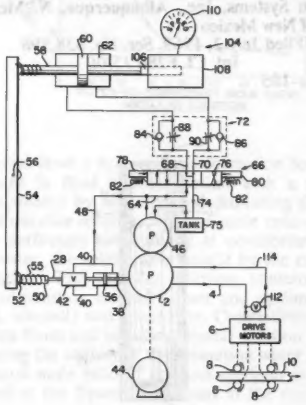
adequate strength and rigidity to comply with service requirements.

3,561,523

MOLD LEVEL CONTROL SYSTEM

Tibor Miklos Vertesi, 211 Reedaire Court, Whitby, Ontario, Canada

Filed May 27, 1968, Ser. No. 732,395
Int. Cl. B22d *11/12*; B22c *19/04*
U.S. Cl. 164—282 3 Claims



A mold level control used with a continuous casting machine having hydraulic motors for withdrawing a cast strand from a mold. The system includes a stem servo-controlled pump supplying fluid to the motors, a piston actuating the stem to control pump output, and a four-way self-centering solenoid valve to control piston movement. Movement of a joystick up or down closes microswitches to operate the valve to decrease or increase strand withdrawal rate respectively. Between joystick movements the valve centers itself and strand withdrawal rate remains steady.

3,561,524

MARINE KEEL COOLER

James Glenn Satterthwaite, 1 Dogwood Trail, Portsmouth, Va., and James B. Macy, Jr., 107 Holly Lane, Morehead City, N.C. 28557

Continuation-in-part of application Ser. No. 711,646, Mar. 8, 1968, now abandoned. This application Oct. 8, 1969, Ser. No. 868,969
Int. Cl. F28b *7/00*
U.S. Cl. 165—76 21 Claims

A marine keel cooler is disclosed which includes two header assemblies each adapted to be mounted on the exterior of a vessel's hull. Each header assembly includes a stud plate and at least two separable members formed of an

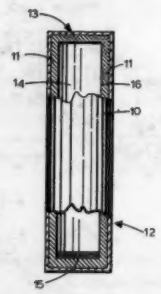
elastomeric material. The members are formed with semicylindrical recesses which cooperate with adjacent recesses to form openings which receive and grip the ends of the heat exchanger tubes. Relatively soft heat resistant seals are positioned over the ends of the tubes within the openings and are tightly gripped when the parts of the header assembly are bolted together. When fluted tubes are used, the parts are proportioned so that the tube is radially contracted to a uniform or standard size during the clamping by the headers. The header assemblies are arranged so that separators may be selectively positioned therein. Such separators permit a given header assembly to be used in single pass, multiple pass, and compound heat exchanger installations. When tubes having deep grooves are provided, i.e., tubes having an outside diameter to groove depth of about four to one or less, the cooler may be mounted in a location where forced flow thereover can be provided solely by the slip stream of the propulsion screw.

3,561,525

HEAT PIPE CONDENSATE RETURN

Stephen C. Baer, Albuquerque, N. Mex., assignor to Energy Conversion Systems, Inc., Albuquerque, N. Mex., a corporation of New Mexico

Filed July 2, 1969, Ser. No. 838,598
Int. Cl. F28d *15/00*
U.S. Cl. 165—105 **7 Claims**



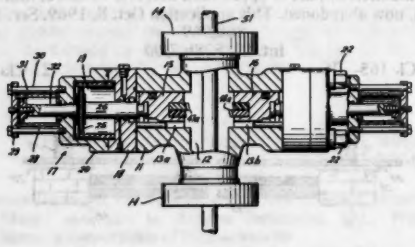
This invention is an improved device for returning the condensate in an evaporation-condensation heat exchanger to the evaporation end utilizing the principle of osmotic action to improve the rate, efficiency and distance of return of the condensed heat exchange fluid.

3,561,526

PIPE SHEARING RAM ASSEMBLY FOR BLOWOUT PREVENTER

Leonard E. Williams, Jr., and Maurice J. Meynier, III, Houston, Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

Filed Sept. 3, 1969, Ser. No. 854,836
Int. Cl. E21b *29/00*
U.S. Cl. 166—55 **4 Claims**



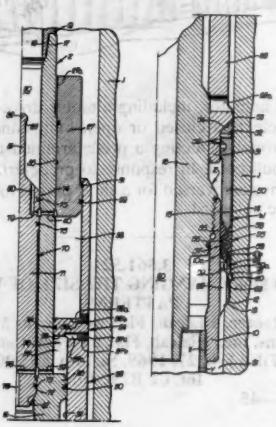
A knife blade is carried by each of the two rams of the ram assembly of a blowout preventer. The knife blades overlap when the rams are closed with the cutting edge of one knife blade passing just below the cutting edge of the other knife blade to shear a pipe string extending through the preventer. Each knife blade engages a seal member on the other ram, when the rams are closed, to form two vertically spaced seals between the engaging faces of the rams.

3,561,527

HYDRAULICALLY SET CASING HANGER APPARATUS AND PACKING SLEEVE

Bobby H. Nelson, Houston, Tex., assignor to Vetco Offshore Industries, Inc., Ventura, Calif., a corporation of California

Filed Nov. 1, 1968, Ser. No. 772,521
Int. Cl. E21b *33/04*
U.S. Cl. 166—86 **19 Claims**



Casing hanger apparatus for hanging a well casing in a casing head beneath a body of water, in which the hanger body is locked into the casing head by the application of fluid pressure, the seal between the casing head and the hanger body also being set by fluid pressure. Such a casing hanger in which the seal includes a longitudinally undulated metal ring deformable by axial force to expand inwardly and outwardly into sealing engagement with inner and outer cylindrical walls.

3,561,528

APPARATUS FOR SIMULTANEOUSLY GUIDING AT LEAST TWO INSERTABLE MECHANISMS IN A WELL TUBING

Huston V. Butler; Tilghman M. Feeler, and Bernard F. Peterson, Ventura, Calif., assignors to Harold Brown Company, Houston, Tex., a corporation of Texas

Filed Oct. 31, 1969, Ser. No. 872,945
Int. Cl. E21b *7/06, 33/00*
U.S. Cl. 166—117.5 **11 Claims**

An apparatus for installing and removing insertable elements, such as flow valves and the like, laterally of a well axis. The well has a plurality of laterally offset receiving stations. An elongated guide tool rotatably supports a top shifting tool and a bottom shifting tool. When the guide tool is lowered into the well, the top shifting tool is normally adapted to remove an element from a predetermined receiving station. The removed element upon becoming aligned with the axis of the well, releases the bottom shifting tool for lateral movement. The bottom shifting tool can then either install or remove another insertable element. Accordingly, in one apparatus aspect at least one insertable element can be

removed and another element installed during a single run by the elongated tool through the well tubing; in another apparatus aspect at least two such elements can be removed during a single run.

3,561,529

THROUGH-TUBING NONRETRIEVABLE BRIDGE PLUG

Arthur L. Owen, Houston, Tex., assignor to Electric Wireline Specialties, Inc., Alice, Tex., a corporation of Texas

Filed Oct. 2, 1968, Ser. No. 764,438
Int. Cl. E21b *33/134*
U.S. Cl. 166—182 22 Claims

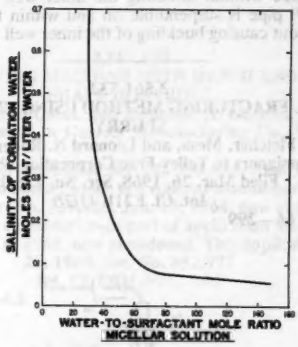
Several concentric sections of tubing are telescoped over each other with each section except the innermost being slotted longitudinally and with the slots of one section being circumferentially offset from the slots of adjacent sections. The innermost section includes a central passageway extending along its entire axial length with a bypass valve disposed at the lower end of the passage. When the innermost section is pulled axially upwardly with respect to the outer sections, the slotted portions are forced radially outwardly to engage and lock to the surrounding well structure. The locking means retains the radial expansion and the central passageway conducts well fluids through the assembly. The valve may thereafter be set to completely close the passageway.

3,561,530

OIL RECOVERY METHOD USING MICELLAR SOLUTIONS

William C. Tosch, Parker, and Stanley C. Jones, Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Aug. 4, 1969, Ser. No. 847,059
Int. Cl. E21b *43/22*
U.S. Cl. 166—252 12 Claims



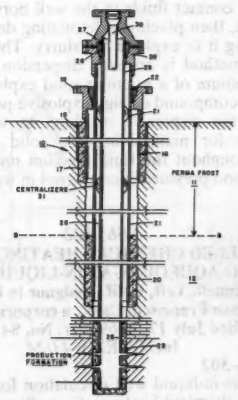
Hydrocarbon from a subterranean formation having an injection means in fluid communication with a production means is recovered by injecting and displacing through the formation a micellar solution having a mole ratio of aqueous medium to surfactant substantially at equilibrium with the formation water, the relationship taught by the curve in the attached figure. The micellar solution contains aqueous medium, hydrocarbon and surfactant and optionally cosurfactant (e.g. alcohol) and electrolyte. Compatibility between the formation fluids and injected micellar solution is obtained by determining the salinity of the formation water and selecting the desired mole ratio of aqueous medium to surfactant as illustrated in the figure to be used in the micellar solution.

3,561,531

METHOD AND APPARATUS FOR LANDING WELL PIPE IN PERMAFROST FORMATIONS

Terrell V. Miller, Houston, Tex., assignor to Esso Production Research Company

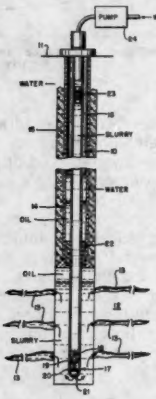
Filed Aug. 21, 1969, Ser. No. 851,886
Int. Cl. E21b *33/14*
U.S. Cl. 166—285 20 Claims



A method for landing and suspending well pipe strings in wells penetrating subsurface formations including formations adjacent the earth's surface particularly susceptible to sub-

sidence, such as permafrost formations or zones, that prevents damage from subsidence. At least one (outer) well pipe is run and set in the permafrost formation and cemented to the permafrost formation. At least one other (inner) well pipe is run and set through the permafrost formation in lower level subsurface formations and cemented only to the lower level subsurface formations below the bottom of the permafrost formation. The entire weight of the inner well pipe is supported on the outer well pipe. In the event of subsequent subsidence of the permafrost formation, the outer well pipe may subside without affecting the inner well pipe. A third inner well pipe is suspendible on and within the inner well pipe without causing buckling of the inner well pipe.

3,561,532
WELL FRACTURING METHOD USING EXPLOSIVE SLURRY
David A. Fletcher, Mesa, and Leonard N. Roberts, Scottsdale, Ariz., assignors to Talley-Frac Corporation, Pryor, Okla.
Filed Mar. 26, 1968, Ser. No. 716,056
Int. Cl. E21b *43/26*
U.S. Cl. 166—299 **8 Claims**

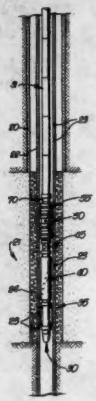


A method of fracturing a geological formation adjacent a well bore is described, comprising injecting a free-flowing explosive slurry, which is nondispersible in well fluids over a time period required to fracture the formation and thus retains its initial density until fracturing and which contains a granular explosive which is nonhygroscopic and insoluble in the dispersive medium of the slurry, into the well bore directly adjacent the formation to be fractured, so that the slurry cannot contact fluids in the well bore before reaching the formation, then placing a detonating device in the slurry and detonating it to explode the slurry. The explosive slurry used in the method is an even dispersion in an inert fluid dispersive medium of a granular solid explosive, which is an organic nitro compound of high explosive power and which is insoluble in the dispersive medium, to which is added a gelling agent for maintaining the solid explosive evenly dispersed throughout the fluid medium under conditions of temperature and pressure encountered in well fracturing.

3,561,533
CONTROLLED CHEMICAL HEATING OF A WELL USING AQUEOUS GAS-IN-LIQUID FOAMS
John C. McKinnell, Taft, Calif., assignor to Chevron Research Company, San Francisco, Calif., a corporation of Delaware
Filed July 17, 1969, Ser. No. 842,733
Int. Cl. E21b *43/24*
U.S. Cl. 166—302 **10 Claims**

Aqueous gas-in-liquid well circulation foams are useful as agents in the chemical heating of a well, e.g., (1) as a cover or blanketing means for hypergolic reactions carried out in a well, or (2) as a carrier means for the controlled introduction and contacting of one or more reactive chemicals of a high energy reaction system into a well.

3,561,534
METHOD AND APPARATUS FOR CLEANING OIL WELLS
Daniel W. Dendy, 950 Molino Ave., Long Beach, Calif. 90804
Filed Sept. 4, 1969, Ser. No. 855,193
Int. Cl. E21b *21/00, 33/12*
U.S. Cl. 166—311 **11 Claims**



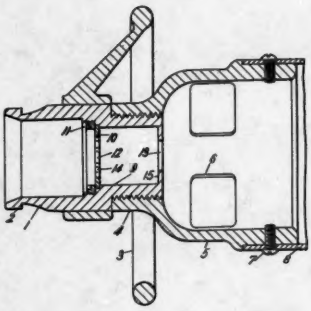
A method for cleaning the perforations in an oil well casing liner set in an oil producing zone of the well hole including setting a cleaning tool initially adapted to produce high fluid pressure in the liner, depositing fluid in the well hole through a pipe, raising and lowering the tool to pump fluid into and create high fluid pressure in the liner so as to force the fluid through the perforations in the liner into the formation, converting the tool while in the well hole to a tool for producing a vacuum in the liner, and then raising and lowering the tool to produce a vacuum in the liner so as to draw the fluid from the formation through the perforations into the liner and to pump the fluid to the surface.

3,561,535
METHOD FOR SIMULTANEOUSLY GUIDING AT LEAST TWO INSERTABLE MECHANISMS IN A WELL TUBING
Huston V. Butler; Tilghman M. Feeler, and Bernard F. Peterson, Ventura, Calif., assignors to Harold Brown Company, Houston, Tex., a corporation of Texas
Filed Oct. 31, 1969, Ser. No. 872,944
Int. Cl. E21b *43/00*
U.S. Cl. 166—315 **4 Claims**

A method for installing and removing insertable elements, such as flow valves and the like, laterally of a well axis. The

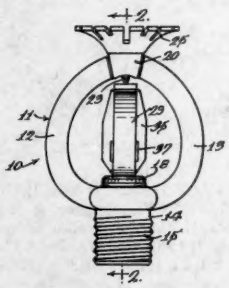
well has a plurality of laterally offset receiving stations. An elongated guide tool rotatably supports a top shifting tool and a bottom shifting tool. When the guide tool is lowered into the well, the top shifting tool is normally adapted to remove an element from a predetermined receiving station. The removed element upon becoming aligned with the axis of the well, releases the bottom shifting tool for lateral movement. The bottom shifting tool can then either install or remove another insertable element. Accordingly, in one method aspect at least one insertable element can be removed and another element installed during a single run by the elongated tool through the well tubing; in another method aspect at least two such elements can be removed during a single run.

3,561,536
JET HEAD FOR FOAM GENERATORS
Thomas Anthony Henshaw, Stonegate, near Wedhust, Sussex, England (9 Arundel Cresent, Brighton, Sussex, England)
Filed June 12, 1968, Ser. No. 745,064
Int. Cl. A62c *31/12*
U.S. Cl. 169—15 **5 Claims**



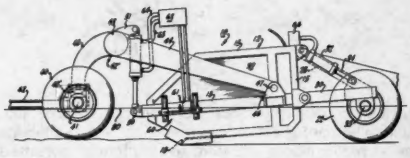
A jet head for a fire-fighting foam generator by which the jet is caused to form a uniform conical spray of droplets without substantial loss of kinetic energy. The liquid stream to form the jet passes through a chamber having an inlet orifice with slots around its periphery, and the part of the stream that passes through these slots impinges on the end wall of the chamber around the periphery of the outlet orifice.

3,561,537
AUTOMATIC SPRINKLER HEAD
Keith M. Dix, Bannockburn, and Harold F. Grenning, Jr., Glenview, Ill., assignors to Fire Protection Company
Filed June 20, 1968, Ser. No. 738,697
Int. Cl. A62c *35/22*
U.S. Cl. 169—38 **14 Claims**



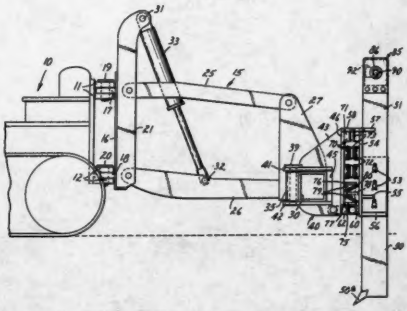
An automatic fire protection sprinkler head including a frame having means providing a passage for water or the like terminating in an outlet closed by a valve disc, together with a temperature responsive linkage acting between the valve disc and the frame to normally maintain the outlet closed comprising a pair of bimetal elements which react similarly on a slow rate of temperature rise below a predetermined high value to produce no effect, and which react differentially when the high temperature is exceeded or when there is a rapid rate of rise in temperature, to release the valve member and let the water flow. Five embodiments are illustrated.

3,561,538
EARTH MOVING MACHINE WITH DEPTH AND CROSS-SHAPE CONTROLS
John Curlett, Los Gatos, and Raymond A. Gurries, San Jose, Calif., assignors to Gurries Manufacturing Co., San Jose, Calif.
Continuation of application Ser. No. 758,645, Aug. 15, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 339,069, Jan. 13, 1964, now abandoned , which is a continuation-in-part of application Ser. No. 157,407, Dec. 6, 1961, now abandoned. This application Aug. 25, 1969, Ser. No. 852,997
Int. Cl. E02f *3/76, 3/00*
U.S. Cl. 172—4.5 **1 Claim**



This invention relates to the control of the height or cross slope or both of an earth working tool such as a scraper blade with height control achieved by use of an external elongated reference member disposed along the path to be traveled by the scraper to actuate the hydraulic control valve of a ram used to move the earth working tool. A pendulum-actuated control valve is used to control cross slope disposition.

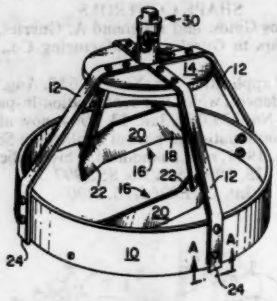
3,561,539
VIBRATORY RIPPER PLOW
James L. Evans, Minneapolis, Minn., assignor to Universal Vibro, Inc., a corporation of Minnesota. by mesne assignment to
Filed May 9, 1968, Ser. No. 727,987
Int. Cl. A01b *35/06*
U.S. Cl. 172—40 **3 Claims**



An elongated ripper plow blade attached to an intermediate member by a mechanical link allowing limited vertical movement and a plurality of resilient pads designed to enhance vibratory movement and the intermediate link being

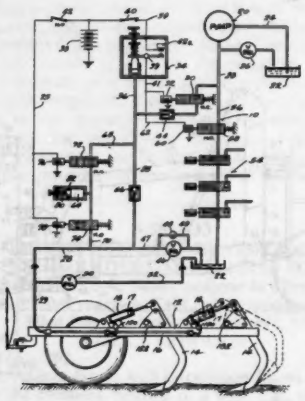
connected to a vertically movable frame so as to allow limited rotary movement thereof about a vertical axis. A hydraulically operated rotary eccentric attached to the plow blade to produce vibratory movement of the plow blade to enhance the ripping or plowing action.

3,561,540
DEVICE FOR PLANTING TREES OR THE LIKE
Anatol Kaszkurewicz, 3341 Carol Ave., Baton Rouge, La.
Filed Apr. 15, 1968, Ser. No. 721,475
Int. Cl. A01b *33/06*
U.S. Cl. 172—111 **13 Claims**



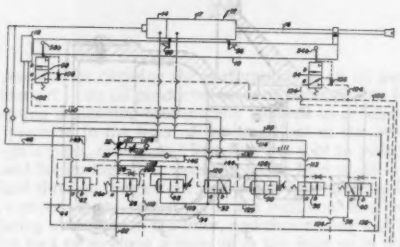
A device for planting cuttings, seedlings, or the like is described. The configuration of the device is such that soil in an annular region about the item to be planted is caused to move centripetally into an excavation containing the item to be planted. At the same time an annular trench is created in the soil around the periphery of the planted item. Methods of conducting the planting operation are also described. Among the advantages of the invention are that it reduces the time and manpower otherwise required for conducting large-scale planting operations on a forestry preserve or the like, and that planted items exhibit increased survival and growth rates.

3,561,541
TRACTOR AND IMPLEMENT HYDRAULIC CONTROL SYSTEM
Roger W. Woelfel, 3780 S. Woelfel Road, New Berlin, Wis.
Filed Sept. 21, 1967, Ser. No. 669,497
Int. Cl. A01b *61/04*
U.S. Cl. 172—265 **13 Claims**



Disclosed herein are hydraulic circuits for controlling hydraulic cylinders utilized on agricultural implements to afford tripping and resetting of the earth working tools. The circuits are provided with means for maintaining suitable working pressures in the cylinders. In one embodiment an adjustable pressure responsive electrical switch is used. In another embodiment an adjustable pressure responsive unloading valve is provided. Check valves in the circuits seal the desired pressure in the hydraulic cylinders and pressure relief valves permit discharge of fluid from the cylinders into a reservoir as the working tools trip. The circuits also include fluid accumulators which can be selectively connected to function as shock absorbers to absorb surges in pressure or disconnected to increase the resistance of the circuit to tripping of the working tools.

3,561,542
CONTROL SYSTEM FOR ROCK DRILLS
Laurence B. Hanson, Pine, and Arthur W. Wallace, Denver, Colo., assignors to Gardner-Denver Company, Quincy, Ill., a corporation of Delaware
Filed Mar. 20, 1969, Ser. No. 808,925
Int. Cl. E21c *5/08, 5/16*
U.S. Cl. 173—1 **3 Claims**



An automatic control system for a guide shell-mounted rock drill including a control circuit having pneumatically operated valves for providing pressure fluid to the drill hammer, rotation motor and feed motor and for controlling drill hole flushing medium. Sensors mounted on the drill guide shell provide for reversal of the feed motor and reduced drill power upon reaching the forward end of the guide shell, and shutdown of the drill upon reaching the rearward end of the guide shell. The control circuit includes a series of control valves for selection, at will, by the drill operator of a particular operating sequence or condition of the drill. A control valve is included for providing an operating sequence which includes operation of the drill at reduced power for a predetermined period of time for collaring a drill hole. The control system also includes pressure proportioning valves for automatically regulating the feed motor pressure to be proportional to the drill percussion motor supply pressure.

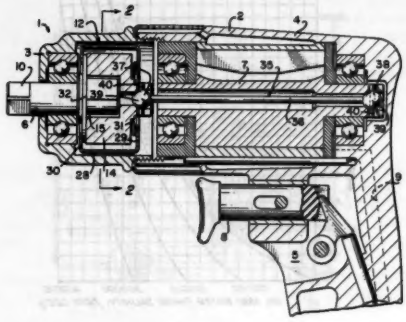
ERRATUM

For Class 173—57 see:
Patent No. 3,561,462

3,561,543
ROTARY IMPACT WRENCH MECHANISM
Otmar M. Ulbing, Lisle, N.Y., assignor to Ingersoll-Rand Company, New York, N.Y., a corporation of New Jersey
Filed Feb. 7, 1969, Ser. No. 797,537
Int. Cl. B25b *21/02*
U.S. Cl. 173—93.5 **11 Claims**

A rotary impact wrench mechanism including a hammer rotating around an anvil with both having cooperating cam surfaces for periodically engaging shoulders on the hammer and anvil to cause impacts. The hammer is connected to the

wrench motor by a joint that allows the hammer to move transversely following impact to cause the hammer to automatically disengage itself from the anvil and to start further rotary movement.



3,561,544

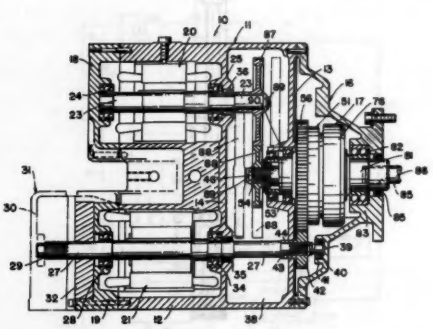
PARALLEL SHAFT DRIVEN MACHINE TOOL WAY OR QUILL UNIT

Herman Farmer, Livonia, Mich., assignor to Buhr Machine Tool Corporation, a corporation of Delaware. by mesne assignment

Continuation of application Ser. No. 694,998, Jan. 2, 1968, now abandoned. This application Dec. 5, 1969, Ser. No. 878,998

Int. Cl. F16h *37/06*

U.S. Cl. 173—145 9 Claims



Two different versions of a machine tool unit are disclosed for use particularly in the mass production machining of castings, forgings and like heavy workpieces at longitudinally spaced stations of factory transfer equipment, past which stations the workpieces are successively indexed, or pallets or otherwise. However, the combination of the invention also pertains generally to individual tool units of the dual feed and traverse motor type, not necessarily operating in such a transfer system, but characterized by a speed reducer, drivingly interposed between a prime mover, such as a feed motor, and a driven machine tool unit or units.

3,561,545

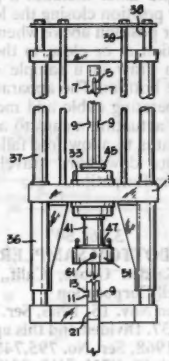
KELLY BAR AND MOUNTING MEANS THEREFOR

Charles L. Rassieur, University City, Mo., assignor to Central Mine Equipment Company, St. Louis County, Mo., a corporation of Missouri

Filed Oct. 8, 1968, Ser. No. 765,783

Int. Cl. E21b *3/04*

U.S. Cl. 173—166 14 Claims



A rotary drill having a driven rotary table with an axially directed passage through its center of rotation defined by a hollow spindle depending from the rotary table. A kelly bar of noncircular cross section extends through the passage. A noncircular face of the kelly bar is engaged for positive rotation with the spindle by a mating piece on the spindle. A circular cross section liquid-tight coupling at the bottom of the kelly bar lies radially within the inner circumference of the noncircular kelly bar. Plungers carried by the spindle selectively engage shoulders on the kelly bar for exerting axial pressure on the kelly bar when the rotary table is moved axially downward.

3,561,546

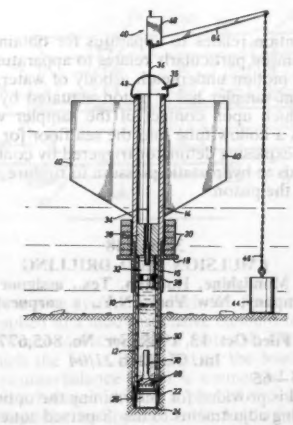
METHOD OF AND APPARATUS FOR UNDERWATER GEOCHEMICAL EXPLORATION

Calvin B. Craig, Dayton, Tex., assignor to Leo Horvitz, Houston, Tex.

Filed Nov. 12, 1968, Ser. No. 774,901

Int. Cl. E21b *9/20, 25/00;* G01n *23/04*

U.S. Cl. 175—5 2 Claims



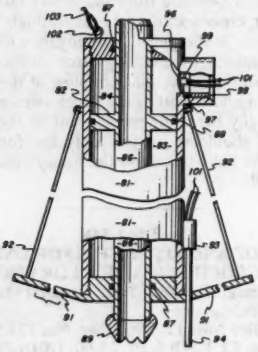
A method of and apparatus for underwater geochemical prospecting by taking samples of the bottom formation and

water at or immediately above the bottom. The method comprises taking samples simultaneously of the water at the bottom and of the earth formation immediately below at spaced apart locations for analysis to determine the concentration of significant hydrocarbon leakage products from subterranean petroleum deposits to be used in exploring for such deposits. The sample taking apparatus comprises a tubular body whose lower end is open and provided with means for penetrating the bottom formation and retaining a sample of the same in the body. The sample taker includes a piston movable upwardly from a lower position closing the lower end portion of the body to an upper position above when the body reaches a predetermined position at or close to the bottom during its downward travel to draw in a sample of water at or immediately above the bottom. The apparatus is adapted to be suspended by an operating cable and means is provided for adjusting the piston actuating means to allow predetermined setting of the apparatus to allow free fall of the body from a desired point of its downward travel before the body penetrates the bottom formation.

3,561,547
BOTTOM SAMPLER

Vlash A. Pullos, Garden Grove, Calif., assignor to North American Rockwell Corporation

Original application Nov. 15, 1965, Ser. No. 507,904, now Patent No. 3,439,537. Divided and this application Sept. 18, 1968, Ser. No. 795,748
Int. Cl. E21b *7/12, 25/00*
U.S. Cl. 175—6 **3 Claims**



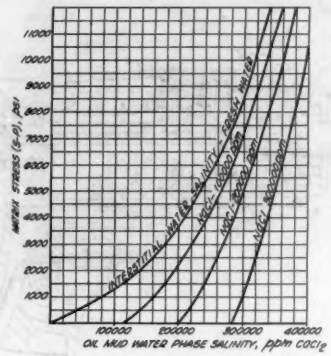
This invention relates to apparatus for obtaining forceful motion and more particularly relates to apparatus for obtaining forceful motion underneath a body of water. In particular, a bottom sampler has a piston actuated by hydrostatic pressure, which upon contact of the sampler with the sea floor, drives a hollow tube into the sea floor for collecting a sample. An explosive detonator triggered by contact with the sea floor adds to hydrostatic pressure to rupture a diaphragm and actuate the piston.

3,561,548
EMULSION MUD DRILLING

Thomas C. Mondshine, Houston, Tex., assignor to National Lead Company, New York, N.Y., a corporation of New Jersey

Filed Oct. 13, 1969, Ser. No. 865,677
Int. Cl. E21b *21/04*
U.S. Cl. 175—65 **4 Claims**

A method is provided for determining the optimum salinity of and making adjustments to the dispersed aqueous phase of an oil base emulsion mud being used to drill through a shale bearing formation. The osmosity of the aqueous phase is adjusted, as by adding calcium chloride or sodium chloride or a mixture thereof, so as to be at least equal to the osmosity corresponding to the sum of the osmosity equivalent of the



matrix stress pressure and the osmosity of the aqueous interstitial fluid in said shale bearing formation.

3,561,549
SLANT DRILLING TOOLS FOR OIL WELLS

Erskine P. Garrison, Long Beach, and John E. Tschirky, Manhattan Beach, Calif., assignors to Smith Industries International, Inc., Whittier, Calif., a corporation of California

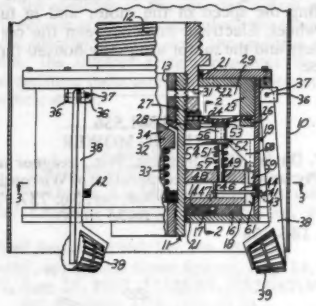
Filed June 7, 1968, Ser. No. 735,414
Int. Cl. E21b *7/06*
U.S. Cl. 175—76 **5 Claims**

Drill string orienting apparatus for nonrotating drill strings equipped with down hole motors, the orienting apparatus preferably being located between the lower portion of the motor and the bit sub and having a laterally projecting portion engageable with the hole formation to bias the bit directionally. Also, orienting apparatus on the string above the down hole motor having a portion projecting laterally opposite to the projection of the first mentioned orienting means. Also, a modification wherein symmetrical stabilizing means is located adjacent the lower end of the motor and laterally disposed directional orienting means is located above the down hole motor in spaced relation to the stabilizing means.

3,561,550
EXPANSIBLE ROTARY DRILL BIT

Gordon E. Mays, 245 27th Court N.W., Birmingham, Ala.

Filed Nov. 10, 1969, Ser. No. 875,187
Int. Cl. E21b 9/26
U.S. Cl. 175—271 10 Claims

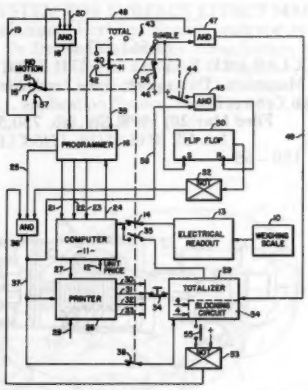


A bit body having passageway therethrough receiving fluid under pressure. Pressure responsive unit communicates with passageway and moves from one position to another upon receiving fluid under pressure. Cutter assembly carried by bit housing surrounding bit body and movable by actuating member to expanded position upon angular movement of bit body prior to introduction of fluid under pressure. Movable restraining member limits angular movement of bit body relative to bit housing upon introduction of fluid under pressure prior to angular movement of bit body.

3,561,551
COMPUTING AND PRINTING WEIGHING SCALE SYSTEM WITH WEIGHT TOTALIZING MEANS

William C. Susor, Toledo, Ohio, assignor to Reliance Electric Company, Toledo, Ohio, a corporation of Delaware

Filed July 23, 1969, Ser. No. 843,940
Int. Cl. G01g 23/38
U.S. Cl. 177—3 8 Claims

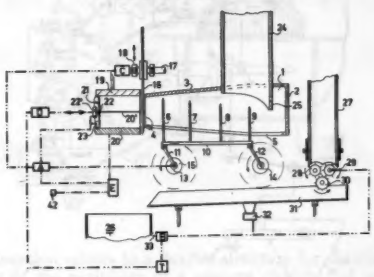


A system for weighing, computing and printing records of the weight and value of each and the total of a plurality of successively weighed loads having retail and wholesale modes of operation. When the system is in the retail mode, tickets are printed showing the weight of a single package, the retail price per pound and value computed by multiplying such single weight and retail price. When the system is in wholesale mode, tickets are printed showing the total weight of a plurality of packages, the wholesale price per pound and value computed by multiplying such total weight and wholesale price.

3,561,552
PROCESS AND DEVICE FOR MEASURING OUT TOBACCO

Robert L. M. Rischke, Quintuslaan 18, Groningen, Netherlands

Filed Dec. 20, 1968, Ser. No. 785,593
Claims priority, application Netherlands, Feb. 6, 1968, 68.01680
Int. Cl. G01g 13/02
U.S. Cl. 177—120 7 Claims

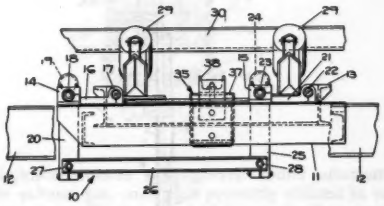


A type of tobacco strand identified as the cut variety is conveyed and compressed by a frustum shaped automatic conveyor system. A pressure sensor activated by virtue of the compressed cut tobacco energizes a rotary knife to cut off a desired volumetric quantity of the cut tobacco. Another type of tobacco identified as the short variety is conveyed by a second automatic conveyor system. The two types of tobacco are commingled on a common weighing mechanism to produce a predetermined quantity by weight of a mixed variety.

3,561,553
LOAD-MEASURING SYSTEM

Otto J. Blubaugh, Columbus, Ohio, assignor to Jeffrey Galion Inc., a corporation of Ohio

Filed July 29, 1968, Ser. No. 748,390
Int. Cl. G01g 11/00, 23/14, 21/24
U.S. Cl. 177—168 5 Claims

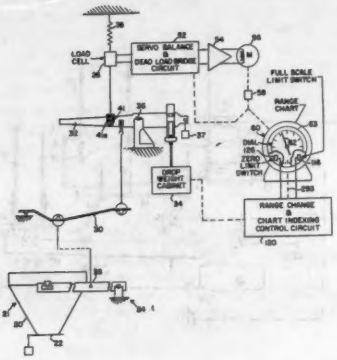


A force-measuring system in which the force of a load of material is applied to a load-responsive element to produce a signal proportional to the weight of material. There is a load beam by which the force is applied to the load-responsive element. A counterbalance beam is connected to the load beam to counterbalance at least a part of the static weight that would otherwise be applied to the load responsive element. The force-measuring system is compactly constructed, and the elements are highly stabilized to be accurately responsive.

3,561,554
ELECTRICAL WEIGHING APPARATUS WITH INCREMENTAL LOAD-COUNTERBALANCING MEANS

Layton C. Merriam, Mendon, Vt., and Arthur J. Burke, Oakland, N.J., assignors to Howe Richardson Scale Company, Clifton, N.J., a corporation of Delaware

Filed July 1, 1969, Ser. No. 838,099
Int. Cl. G01g 1/34
U.S. Cl. 177—203 14 Claims

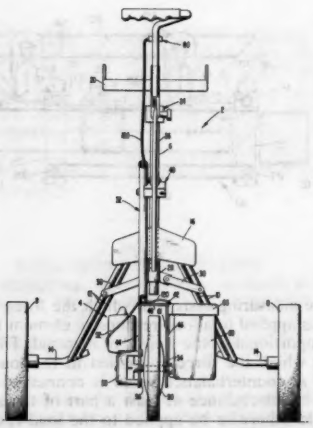

LOAD CELL
SERVO BALANCE & DEAD LOAD BRIDGE CIRCUIT
FULL SCALE LIMIT SWITCH
RANGE CHART
ZERO LIMIT SWITCH
DROP WEIGHT CASSETTE
RANGE CHANGE & CHART INDEXING CONTROL CIRCUIT

A weighing apparatus having a load cell operatively connected to the lever system of a scale so that the output signal voltage of the load cell represents the load-produced force that is transmitted by the lever system to the input of the load cell. A control circuit responds to the load cell output signal voltage to back balance a portion of the load being measured with range weights that are applied to the lever system so that the effective operating range of the load cell is limited to only a fractional proportion of the total scale capacity. As load-counterbalancing weights are added and removed, the control circuit also operates a multirange chart in a weight indicating dial mechanism to provide a readout of the total weight of the load.

3,561,555
POWER ATTACHMENT UNIT FOR GOLF BAG CARTS

James W Carmichael, Clearwater, Fla., assignor to Haja, Inc., Miami, Fla.

Filed May 29, 1969, Ser. No. 829,022
Int. Cl. B60k 1/04
U.S. Cl. 180—11 8 Claims

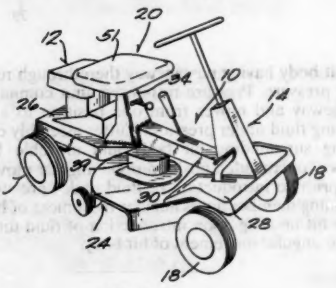


A power attachment unit for golf bag carts comprising a curved support tube whose lower end is fixed to an inverted yoke support having mounted therein a wheel to be power driven by means of a motor and gear assembly mounted to one side of the yoke support. To the other side of the yoke support is fixed a battery case containing a battery for energizing the motor. The support tube is mounted to the vertical stem of the push cart by means of a releasable and adjustable clamping bracket. An electrical control unit is mounted by a second clamping bracket to the handle of the push cart for controlling the speed of the motor and in turn the power driven wheel. Electrical lines between the control unit and the battery and the motor are partly housed through the support tube.

3,561,556
RIDING MOWER

John W. Davies, III, Plymouth, Wis., assignor to Gilson Bros. Co., Plymouth, Wis., a corporation of Wisconsin

Filed June 14, 1968, Ser. No. 737,078
Int. Cl. B62d 23/00
U.S. Cl. 180—54 7 Claims

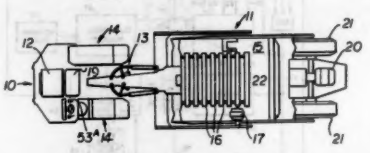


A riding mower frame assembly having an engine base connected to a front wheel shroud by a channel shaped box beam with a seat support pedestal having rearwardly diverging sidewalls mounted on the box beam with the lower edges of the sidewalls welded to the engine base on each side of the box beam to constitute the pedestal as an overhead base reinforcing truss.

3,561,557
VEHICULAR DRIVE SYSTEM WITH ELECTRIC ASSIST

Lee T. Magnuson, Davenport, Iowa, and Alexander Kusko, Newton Centre, Mass.

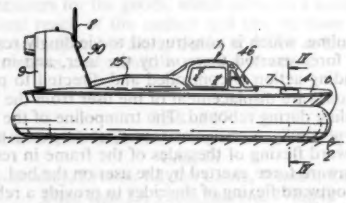
Filed May 20, 1968, Ser. No. 730,541
Int. Cl. B60l 15/20, 11/08
U.S. Cl. 180—65 1 Claim



A vehicle is equipped with a main drive system and an electric assist drive system which is actuated by the operator when the vehicle speed falls below some predetermined speed. A prime mover for the vehicle, in addition to driving two wheels directly through a primary transmission, drives a three-phase electrical alternator. The alternator energizes an induction motor with a torque-regulating control system for independently driving two other wheels of the vehicle to provide greater traction at low speeds. The rotor circuit of the induction motor includes a rectifier bridge which feeds a line-commutated inverter for coupling the slip power back to the stator input. The control system determines the firing angle for conduction of the switches in the inverter to control the output torque of the induction motor as a function of

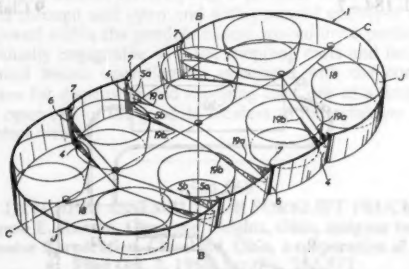
speed. The system includes a shaping network which defines the desired speed-torque characteristic for accelerating the vehicle; and it generates a signal representative of a demand torque for a given motor speed. Another circuit sensing rotor current generates a signal representative of the load torque. A comparison circuit receives the two signals representative respectively of the actual torque and the desired torque for that speed; and it generates an error signal for controlling the firing angle of the switches in the inverter circuit such that the motor and vehicle are accelerated along the torque-speed envelope of the shaping network once the assisting system is actuated. Thus, the control system regulates the output torque of the assisting induction motor as a predetermined function of vehicle speed.

3,561,558
GROUND-EFFECT CRAFT
Robin Derrick Parkhouse, La Massana, Andorra, assignor to Hovermarine Limited, Southampton, England, a British company
Filed Aug. 14, 1968, Ser. No. 752,514
Claims priority, application Great Britain, Aug. 14, 1967, Aug. 14, 1967, Aug. 25, 1967, 37323/67;37324/67;39337/67
Int. Cl. B60v *1/14, 1/16, 1/20*
U.S. Cl. 180—120 **12 Claims**



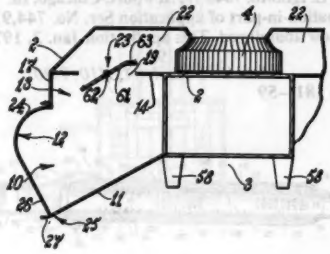
A ground-effect vehicle is provided with a flexible, cushion-containing skirt, a centrifugal fan for supply of cushion air, an airscrew for propelling the vehicle, rudders for steering the vehicle, "puff-ports" for supplying turning moments to the vehicle, the fan and airscrew being driven by separate engines.

3,561,559
SKIRTING SYSTEM FOR SURFACE EFFECT MACHINE
Guy Robert Delamare, Herblay, France, assignor to Societe D'Etudes Et De Developpement Des Aeroglisseurs Marins - S.E.D.A.M., Paris, France, a company of France
Filed May 13, 1968, Ser. No. 728,726
Claims priority, application France, May 18, 1967, 106,832
Int. Cl. B60v *1/16*
U.S. Cl. 180—127 **3 Claims**



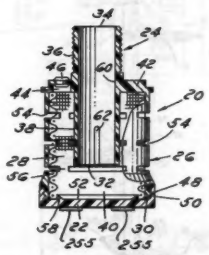
A multilobed flexible skirt device for a surface effect machine, comprising a flexible diaphragm, such as a canvas, connecting the lobes of the skirt, the diaphragm being only partly continuous, since it is cut away over a predetermined curve, and being attached on the one hand to the skirt at the cuspidal edge junctions of its lobes and on the other hand to the skirt support structure of the machine.

3,561,560
FLEXIBLE STRUCTURE FOR AIR CUSHION VEHICLES
Alfred J. Ford, Launceston, Tasmania, Australia, assignor to Air Cushion Vehicles Australasia Pty. Ltd., Launceston, Tasmania, Australia
Filed Sept. 9, 1968, Ser. No. 758,318
Claims priority, application Australia, Oct. 13, 1967, 28481/67
Int. Cl. B60v *1/04, 1/16*
U.S. Cl. 180—128 **21 Claims**



This invention relates to a flexible structure for defining at least part of the periphery of a plenum chamber of an air cushion vehicle. The structure includes two sidewalls defining an open-top channel adapted to receive fluid under pressure from a pressure supply source, a closable fluid passage is defined along the base of the channel and a lip or flap forming a continuation of the lower edge of one of the sidewalls defines a valve member engageable with a reaction surface over which the vehicle is positioned to regulate escape of air from the plenum chamber beneath the flexible structure. The arrangement is such that the fluid pressure within the channel is maintained substantially equal to that within the plenum chamber.

3,561,561
SOUND ATTENUATING DEVICE
John B. Trainor, 2771 Charter Blvd. Apt. 106, Troy, Mich.
Filed Nov. 28, 1969, Ser. No. 880,825
Int. Cl. F01n *1/10, 7/18*
U.S. Cl. 181—55 **17 Claims**

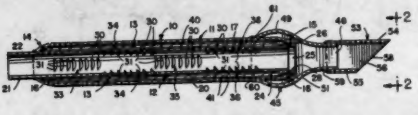


This disclosure relates to improved sound attenuating devices for exhaust gas, such as is presently utilized in various industries to muffle the sound of pneumatically operated industrial equipment. The basic embodiment includes an exhaust entrance tube, a shell encircling the tube defining a gas expansion chamber or plenum having exhaust slots, and a screen overlying the exhaust slots. The tube and shell are integrally formed of plastic to improve the sound attenuating characteristics and reduce the safety hazard of separate secured parts.

The second disclosed embodiment includes a sound absorbing medium in the form of a cellular disc opposite the gas exit of the tube and a floating perforated disc located between the tube exit and the sound absorbing medium. A baffle deflector is also provided at the gas exit of the tube, deflecting the gas into the sound absorbing medium and then

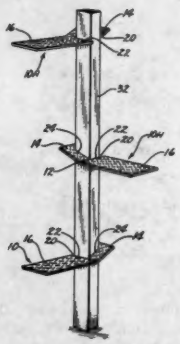
into the annular expansion chamber surrounding the tube. The third embodiment includes a metering valve having a nonrotatable, axially shiftable cylindrical plug telescopically received in the gas exit end of the tube. The metering plug has a plurality of longitudinal V-shaped tapered slots increasing in width toward the plug end received in the tube, accurately controlling the flow of gas.

3,561,562
AUTOMOTIVE EXHAUST SYSTEM UNITS
Vincent E. Ignoffo, 7040 W. Newport, Chicago, Ill. 60634
Continuation-in-part of application Ser. No. 744,917, July 15, 1968, now abandoned. This application Jan. 2, 1970, Ser. No. 93
Int. Cl. F01n *1/04, 1/10, 7/20*
U.S. Cl. 181—59 **12 Claims**



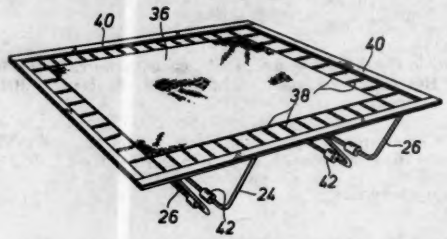
Automotive exhaust resonator or muffler having a tubular outer shell with a tapered or dome-shaped downstream end and exhaust-conveying tube extending longitudinally therethrough and a hollow exhaust discharge extension having its upstream end snugly fitted on the medial portion of the shell, said extension embodying a downstream portion merging from the round or oval transverse cross section of the upstream portion into a substantially rectangular transverse cross section defining a rectangular exhaust discharge opening which is longer than the diameter of said medial portion in one dimension and narrower than said diameter in the other dimension.

3,561,563
PORTABLE POST STEP
Ralph Harsh, 905 Bryan, Adel, Iowa 50003
Filed Aug. 14, 1969, Ser. No. 850,213
Int. Cl. E06c *7/08*
U.S. Cl. 182—92 **1 Claim**



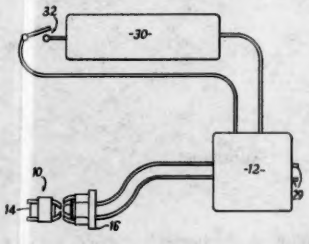
An integral rigid catwalk metal sheet bent along a transverse fold line to provide a post engaging portion and a step portion, the post engaging portion having a laterally inwardly extending notch for engaging the post. The post is engaged by opposing edges of the notch wherein one of the edges is the inner edge portion of the step portion. The step is placed on the post from the side and the weight of the step portion will cause the unit to pivot downwardly bringing the opposing edges of the notch into engagement with the post thereby locking it in place. The post engaging portion forms an obtuse angle with the step portion and the step portion is normally positioned in a horizontal plane. A series of vertically spaced apart steps may be placed on a post and extend alternately from the post at angles of 90° to each other. Oppositely facing concave portions may be formed in the opposing edge portions for matingly engaging the rounded peripheral edge of a round post.

3,561,564
TRAMPOLINE
Edward W. Russell, 6404 Denton Drive, Dallas, Tex. 75235
Filed Apr. 9, 1969, Ser. No. 814,654
Int. Cl. A63b *5/18*
U.S. Cl. 182—139 **3 Claims**



A trampoline, which is constructed to yieldingly resist the downward force exerted thereon by the user, and in which the rebounding action is controlled and directed to prevent accidental outward displacement of the user from the bed of the trampoline during rebound. The trampoline of the invention has a generally rectangular frame, constructed to contract by inward flexing of the sides of the frame in response to the downward force exerted by the user on the bed, and to expand by outward flexing of the sides to provide a rebounding action tending to cause the user's body to move inwardly of the frame during rebound, whereby accidental displacement of the user outwardly beyond the frame is prevented. The frame is supported on U-shaped legs or support members which are shaped to yieldingly resist the contracting movement of the frame and to allow sagging movement of the frame in response to downward force exerted on the bed, whereby the directed rebounding action of the frame is augmented.

3,561,565
PULSE-ACTUATED LUBRICATION SYSTEM
Dennis Frederick Woor, 34 Powisland Drive, Derriford, Plymouth Devon, and Peter William Stripp, 34 Looseleigh Lane, Crownhill, Plymouth Devon, England
Continuation-in-part of application Ser. No. 569,324, Aug. 1, 1966, now abandoned. This application Sept. 15, 1969, Ser. No. 865,224
Int. Cl. F16n *7/14;* **K03k** *21/00;* **H02k** *21/12*
U.S. Cl. 184—7 **9 Claims**

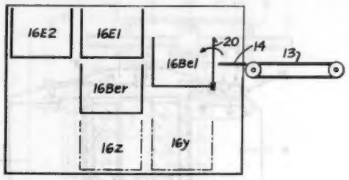


A lubricating system supplies lubricant to various parts of an apparatus. An electrical pulse generator provides a signal so as to actuate the lubricating means. A blocking oscillator stores a specific number of pulses from the generator to provide a counting cycle from which the signal is produced.

3,561,566
ARRANGEMENT, ESPECIALLY FOR USE IN CONNECTION WITH THE CASHIER STAND, FOR SELF-SERVICE STORES AND THE LIKE

Werner Potrafke, Hufeisenstrasse 16, 432 Hattingen, (Ruhr), Germany

Filed Apr. 18, 1968, Ser. No. 722,364
Claims priority, application Germany, Apr. 20, 1967, P41946
Int. Cl. E04h 3/04
U.S. Cl. 186—1 18 Claims

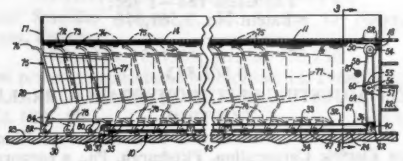


An installation for self-service stores according to which the goods purchased by a customer are moved by the latter to the cashier, checked off by the latter, and packed by the customer, which includes a plurality of, at least three, receiving containers for the goods, which between a loading station in manual reach of the cashier and one or more unloading stations are adjustable along tracks of which at least one section extends in a substantially vertical direction.

3,561,567
STORAGE AND DISPENSING SYSTEM FOR SHOPPING CARTS

Woody Bradley, 7344 N. Edythe Circle, Winton, Calif. 95388

Filed Oct. 23, 1968, Ser. No. 770,042
Int. Cl. E04h 3/04
U.S. Cl. 186—1 5 Claims



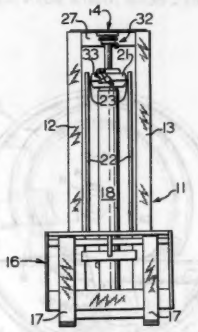
A storage and dispensing system for shipping carts which utilizes an elongated product display shelf gondola of the type found in supermarkets and the like modified to include opposite open and closed ends and an elongated inner compartment therein for receiving a plurality of such shopping carts through said open end with powered conveyor means disposed within the gondola having spaced drive portions individually engageable with the shopping carts and including control means operationally associated with the conveyor means for dispensing said shopping carts one at a time from the open end of the gondola incident to the actuation of the control means.

3,561,568
LATCHING ASSEMBLY FOR FORKLIFT TRUCKS

Eugene E. Hansen, Cleveland Heights, Ohio, assignor to Towmotor Corporation, Cleveland, Ohio, a corporation of Ohio

Filed Oct. 2, 1968, Ser. No. 764,571
Int. Cl. B66b 9/20
U.S. Cl. 187—9 14 Claims

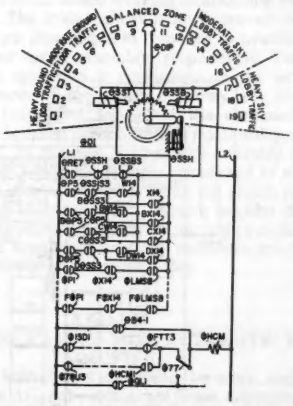
An assembly for preventing unsupported extension of the extendible mast or slider relative to the stationary mast of a forklift truck. A coupling associated with the slider and an extendible portion of the forklift motor means automatically couples the slider to the extendible motor portion when the slider is raised relative to the stationary mast and adjacent the extendible motor portion. A latching arrangement associated with the forklift carriage and the slider functions in at least partial response to downward force on the carriage to effectively latch the carriage and slider when the slider is raised relative to the stationary mast and not adjacent the extendible motor portion.



3,561,569
CONVEYOR SYSTEM FOR ELONGATED STRUCTURES

John Suozzo, Hackensack, and Henry C. Savino, Hackensack, N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa., a corporation of Pennsylvania

Original application Feb. 11, 1966, Ser. No. 526,813, now Patent No. 3,467,223. Divided and this application May 28, 1969, Ser. No. 828,555
Int. Cl. B66b 1/20
U.S. Cl. 187—29 9 Claims



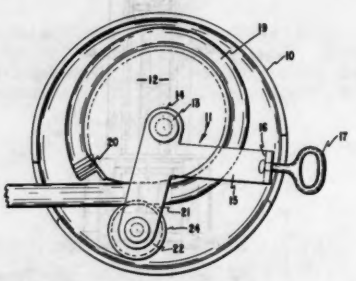
A tall building has a lower first feeder or shuttle bank of elevators operating between a bottom terminal or main floor and a transfer floor. The building has a local second bank of elevators operating between the transfer floor and higher floors to provide local service. A computer maintains a proper number of feeder elevators in service, distributes feeder elevator cars between the bottom terminal and transfer floors, and coordinates arrival of local and feeder elevator cars at the transfer floor. If plural feeder banks are employed the computer coordinates the service provided by such feeder banks.

3,561,570

SNUBBER INCLUDING VISCOUS FLUID

Henry L. Sundermann, 945 S. Holt Ave., Sioux Falls, S. Dak.

Filed Nov. 12, 1968, Ser. No. 775,049
Int. Cl. F16d *63/00*
U.S. Cl. 188—1 2 Claims



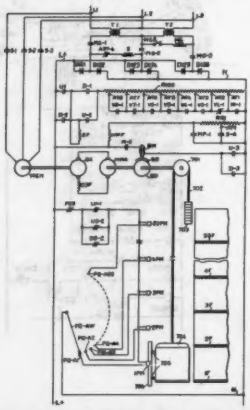
A fluid-filled flexible tube compressed between at least one roller and another surface. The viscosity of the fluid and the space between the roller and the surface determine the amount of snubbing available.

3,561,571

ELEVATOR GROUP SUPERVISORY CONTROL SYSTEM

John A. Gingrich, Toronto, Canada, assignor to Dover Corporation, New York, N.Y., by mesne assignments

Filed Nov. 4, 1966, Ser. No. 592,186
Claims priority, application Great Britain, Nov. 5, 1965, 47,065
Int. Cl. B66b *1/20*
U.S. Cl. 187—29 54 Claims



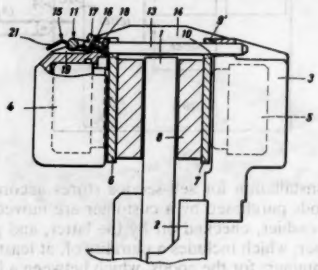
The disclosure relates to an elevator group supervisory control system in which bits of information, as to registered demands for service, position of the cars, and the degree of availability of the cars relative to the number of calls for service each is capable of answering without undue delay, are successively and repetitively scanned to control the respective movement of the cars.

3,561,572

DEVICE FOR MOUNTING FRICTION LINING CARRIERS IN DISK BRAKE ASSEMBLIES

Helmut Flegl, Stuttgart-Zuffenhausen, and Hans Mezger, Ludwigsburg, Germany, assignors to Firma Dr. Ing. h.c.F. Porsche K.G., Stuttgart-Zuffenhausen, Germany

Filed Mar. 6, 1969, Ser. No. 804,849
Claims priority, application Germany, Mar. 8, 1968, P31039
Int. Cl. F16d *65/02*
U.S. Cl. 188—73.6 4 Claims



Apparatus for mounting friction lining carriers of disc brake assemblies, particularly for use in automotive vehicles, including readily removable means for supporting the carriers and the friction linings secured thereto, in a stationary position relative to the brake caliper structure, within a recess provided in said caliper structure.

ERRATUM

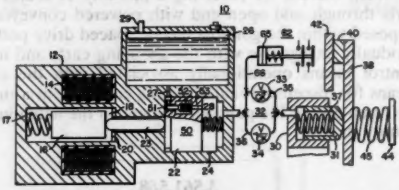
For Class 188—1 see:
Patent No. 3,561,570

3,561,573

SELF-ADJUSTING ELECTROHYDRAULIC BRAKE CONTROL

Laird R. Allen, Jr., Monroeville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa., a corporation of Pennsylvania

Filed Dec. 9, 1968, Ser. No. 782,366
Int. Cl. B60t *13/04, 13/22*
U.S. Cl. 188—171 5 Claims



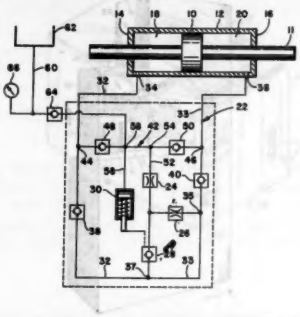
A compact electrohydraulic brake control system in which a reservoir of brake fluid is employed to compensate for brake shoe wear and for brake fluid leakage. In addition, an electric recycling circuit provides a means for compensating for fluid leakage, and a check valve arrangement prevents the hydraulic system from becoming air bound even when the fluid containing parts thereof are above the fluid level in the reservoir.

3,561,574

FLUID FLOW CONTROL DEVICE

Richard H. Dickinson, Jr., Shaker Heights, and William A. Gail, Northfield, Ohio, assignors to McDowell-Wellman Engineering Company, Cleveland, Ohio

Filed Apr. 25, 1969, Ser. No. 819,184
Int. Cl. F16d 57/00
U.S. Cl. 137—110 17 Claims



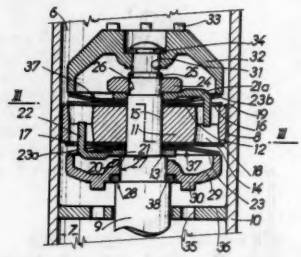
There is provided a fluid flow control device which is particularly useful in hydraulic shock absorber or damping devices, and characterized by a circuit attachable to a system where fluid moves under pressure in either of two directions. This circuit includes a pair of constrictions of considerably different resistance to fluid flow in series with each other. Bypass means are provided around one constriction which function to render such restriction inoperative when predetermined pressure conditions exist.

3,561,575

ADJUSTABLE HYDRAULIC DAMPER

Fernand Stanislas Allinquant, 53, Avenue Le Notre, 92 Sceaux, France

Filed Jan. 10, 1969, Ser. No. 790,250
Claims priority, application France, Mar. 11, 1968, 143,253
Int. Cl. F16f 9/44
U.S. Cl. 188—88 4 Claims



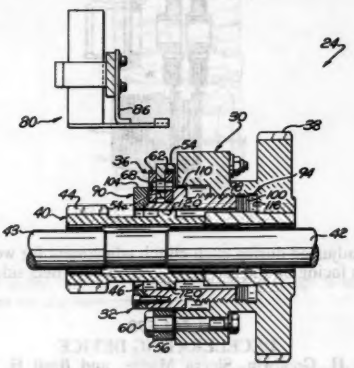
This invention relates to a hydraulic damper device in which a piston and piston rod assembly is axially slidable in a cylinder, said piston assembly including passage means controlled by a spring leaf valve to restrict flow of hydraulic fluid through said passage means thereby to afford damping, characterized by the provision of a bent washer of resilient material whose convex surface presses the spring leaf against a front surface of the piston assembly in a region around the piston rod, and a control member engaging a peripheral portion of the bent washer and slidable along the piston rod to adjust the surface area of said region.

3,561,576

MACHINE TOOL DRIVE

Gilbert F. Lutz, Chesterland, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio, a corporation of Ohio

Filed Jan. 23, 1969, Ser. No. 793,289
Int. Cl. F16d 43/20; B23b 21/00
U.S. Cl. 192—56 23 Claims



An improved machine tool assembly includes cross-slide and turret assemblies for supporting tools which operate on a workpiece mounted on a spindle assembly. These assemblies are driven in a predetermined working relationship by a common drive train. The drive train includes improved clutch assemblies which are disengaged in response to overloading of the cross-slide or turret assembly, respectively. To ensure that the desired operation is performed on the workpiece after disengagement of the clutch assembly, the clutch assembly can be reengaged only when the previously overloaded assembly is in the predetermined relationship with the other assemblies. To this end, each clutch assembly includes a driving member which is drivingly connected in an initial relationship with a driven member when the clutch assembly is engaged. Upon disengagement, relative angular displacement between the driving and driven members occurs. The clutch cannot be reengaged until the members are restored to their initial predetermined relationship.

3,561,577

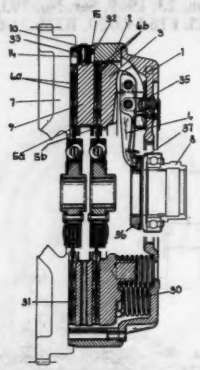
MULTIPLE DISC CLUTCH WITH AUTOMATIC WEAR ADJUSTER

Richard Binder, Schweinfurt am Main, Germany, assignor to Fichtel & Sachs AG, Schweinfurt am Main, Germany

Filed Mar. 14, 1969, Ser. No. 807,174
Claims priority, application Germany, Mar. 23, 1968, P 17 55 032.2
Int. Cl. F16d 13/75
U.S. Cl. 192—111 10 Claims

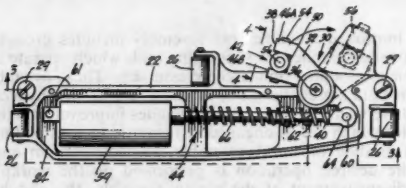
A double-plate friction clutch in which the axial movement of the spring-loaded intermediate driving plate away from the flywheel is limited by an improved mechanism. An abutment member is axially slidably mounted on the intermediate disc in axial alignment with two abutments on the flywheel which are oppositely offset from the abutment member. A friction brake on the intermediate disc prevents axial shifting of the abutment member under the pressure of the relatively weak springs pushing the intermediate plate away from the flywheel, but cannot prevent shifting of the abutment

member by the more powerful pressure plate springs so that the position of the abutment member on the intermediate



disc is adjusted during each clutch adjustment for wear of the friction facing on the driven disc on the flywheel side.

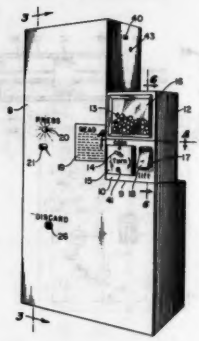
3,561,578
DECELERATING DEVICE
Walter H. Goodwin, Sierra Madre, and Basil H. Minnich, Long Beach, Calif., assignors to McDonnell Douglas Corporation, a corporation of Maryland
Filed Oct. 1, 1968, Ser. No. 764,269
Int. Cl. B65g *11/20*
U.S. Cl. 193—32 **6 Claims**



An article decelerating device including a rotatably supported lever, a self-releasing unit pivotally mounted to one end of the lever, and at least one hydraulic energy absorber coupled to another end of the lever. The self-releasing unit, adapted to engage a moving article, is spring-loaded and normally held in an upright position. Upon engagement of a moving article with the self-releasing unit, the inertial force of the article is transferred to the lever. The lever rotates to exert pressure upon the hydraulic energy absorber to a predetermined absorption limit, thus to reduce the speed of the moving article. When the predetermined amount of energy has been absorbed by the hydraulic energy absorber and upon movement of the lever to a release position, the remaining inertial force imparted by the moving article causes the self-releasing unit to pivot about its axis automatically to disengage the moving article, thus releasing the article for further movement at a reduced speed.

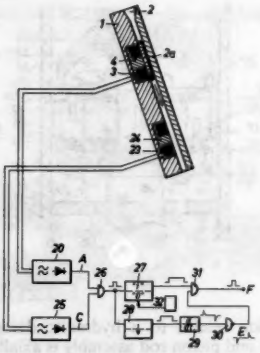
3,561,579
SEMIAUTOMATIC TOY BALLOON VENDING AND INFLATING MACHINE
Rudolph L. Allison, Rockford, Ill., assignor to Paramount Textile Machinery Company, Chicago, Ill., a corporation of Illinois
Filed June 4, 1969, Ser. No. 830,417
Int. Cl. G07f *1/00*
U.S. Cl. 194—1 **24 Claims**

This machine vends the balloon envelope and string in a capsule upon deposit of a coin and turning of a knob. Then a button on the machine is automatically lighted signalling the customer that upon depression of the button, after application of the neck of the balloon to a nozzle adjacent the button, the balloon will be inflated. The vending mechanism released for operation of the knob by depositing a coin has a novel arrangement of magnetically operable electrical switches that are so connected in an electrical circuit that they have to be operated in succession to light the signal light



and activate the inflation means, thereby preventing activation of the inflation means more than once per coin deposited. There is also novel memory means in the electrical circuit which permits depositing several coins at one time for the vending of a number of balloon capsules in succession, the memory means serving after the first of the balloons has been inflated to cause the button to be lighted again signalling that the machine is ready for another cycle, and so on until all of the coins deposited have been accounted for.

3,561,580
COIN TESTER HAVING A PAIR OF INDUCTION COILS
Mario Meloni, Muri/BE, Switzerland, assignor to Autelca AG, Gumligen, Switzerland
Filed Jan. 31, 1969, Ser. No. 795,608
Claims priority, application Switzerland, Feb. 5, 1968, 1677/68
Int. Cl. G07f *3/02*
U.S. Cl. 194—100 **5 Claims**

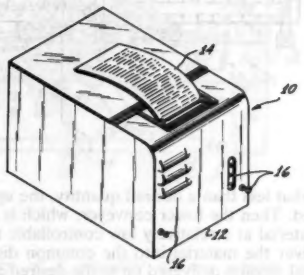


A coin tester comprises a pair of oscillators respectively connected to a pair of self-induction coils with a coin track extending through the fields of the coils, the oscillators being connected in a logic circuit so that the oscillation of one of the oscillators temporarily ceases when an acceptable coin passes along the coin track and the oscillations of both temporarily cease or are uninterrupted when another object passes along the coin track.

3,561,581
SIGNAL-CONTROLLED PRINTER

George Takenaka, Santa Ana, Calif., assignor to Codamite Corporation, Anaheim, Calif.

Filed Feb. 27, 1968, Ser. No. 708,572
Int. Cl. B41j 1/46
U.S. Cl. 197—49 5 Claims



An alphanumeric signal control character printer is disclosed for typing or printing symbolic data in accordance with binary code electrical signals. A somewhat cylindrical-type body or font carries the print symbols and is positioned by a pair of bidirectional stepping motors to align each character in printing relationship to a printing medium. One of the stepping motors translates the type font while the other revolves it. Thus, after a letter, numeral or other symbol disposed about the type font is selectively placed in printing position, a hammer closes the medium and the selected symbol. In this manner, characters are printed (one symbol at a time) and the type font along with the hammer is progressively stepped across the sheet of paper or other medium.

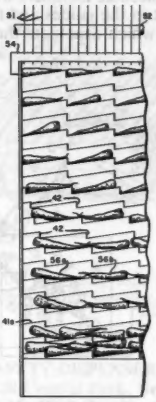
The system also incorporates structure defining a reference position for the font, from which the font is moved to print each character, then returned to the referenced position. By providing more than one reference position, the operating speed of the system is increased. The structure also incorporates a mechanical detent or indexing arrangement whereby the type font is stabilized only in printing position. A control system cooperates with the indexing system to maintain the font in the current reference position, by withholding the operation of the print font until passage of a period during which establishment of the reference position is verified. The system also incorporates an inking structure in the form of a continuous loop of ribbon that is mounted in changing relation to the path of the print font and which ribbon is continuously driven for effectively supplying ink. Still further, the system incorporates an automatic margin control structure whereby carriage return signals may be transmitted to terminate a line of type, or such signals will occur automatically upon reaching a predetermined position, with the occurrence of a space between words.

3,561,582
SHUFFLE FEED POSITIONER

Traver J. Smith, San Jose, Calif., assignor to Genevieve I. Hanscom, Saratoga, Calif., a part interest and Genevieve I. Hanscom, Robert Magnuson, and Lois J. Thomson, as trustees of the estate of Roy M. Magnuson, a part interest

Filed July 24, 1968, Ser. No. 747,393
Int. Cl. B65g 47/28, 25/04
U.S. Cl. 198—30 7 Claims

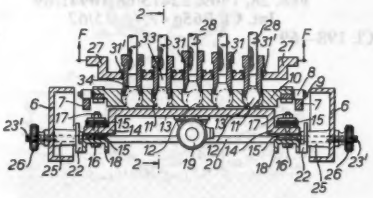
A shuffle feed structure for feeding articles which require cutting into lengths or other operations involving orienting, in which the article advancing faces of the shuffle members include a series of wedge-shaped surfaces for feeding and orienting the articles (such as carrots or cucumbers) so that each article rests against one of the inclined faces of the shuffle feed member and abuts the end face of one of the wedges. A series of the shuffle feed members have their wedges offset laterally toward one side of the machine to produce a feeding action of the articles laterally in the direction of the offset to insure proper orientation of each article into a wedge-shaped pocket. Finally, the articles are carried through a series of knives and are cut into lengths.



3,561,583
APPARATUS FOR ORIENTATING FRUIT PRODUCTS FOR PROCESSING

Giordano Tomelleri, 22 Via Montorio, Verona, Italy

Filed May 5, 1969, Ser. No. 821,849
Claims priority, application Italy, May 6, 1968, 61246-A/68
Int. Cl. B65g 47/24
U.S. Cl. 198—33 7 Claims



The invention relates to apparatus for mechanically orientating fruit products of ovoid form carried in cavities provided in a conveyor, the base of each cavity having an orifice in which the fruit seats when correctly orientated, a plate provided above the conveyor supporting rotatable positioning members and adapted to be vertically displaced so as to bring said members into contact with the products and to retract said members when correct orientation is achieved, each of said members comprising a cylindrical member having a radially extending flange which serves to support it on the plate and having a frustoconical or conoidal hollow opening extending towards the product, means being provided below the conveyor belt to cause the products to be shaken continuously whilst they are being orientated.

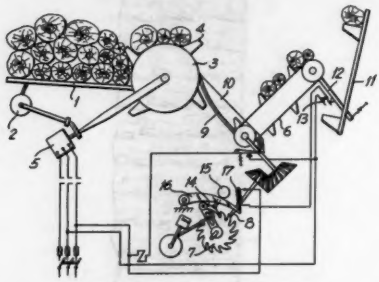
3,561,584
APPARATUS FOR FEEDING PULPWOOD TO A CONVEYOR OF A DEVICE FOR CHARGING DEFIBER MAGAZINES

Adolf Pinkhusovich Sinyavsky, ul. B. Porokhovskaya, 46, kv. 50, and Viktor Alexandrovich Bedeker, V.O. IO linia, 43, kv. 35, Leningrad, U.S.S.R.

Filed June 11, 1968, Ser. No. 736,189
Int. Cl. B65g 47/00
U.S. Cl. 198—45 2 Claims

Pulpwood is fed from a vibratory table to a drum with grips which deposits the pulpwood onto a first guide in turn trans-

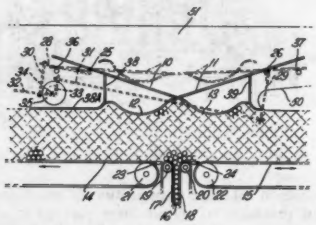
ferring the pulpwood to a conveyor which transports the pulpwood to a second guide, in turn transferring the pulpwood to a conveyor for charging defiber magazines. Both guides include displaceable members which are moved when pulpwood is present in the guides and these members act on respective switches which deactuate the drive of the preceding drum and conveyor respectively. Thus, when the first guide is loaded with pulpwood, the drum is at rest and when the second guide receives pulpwood from the first conveyor, the drive of the latter is terminated until the pulpwood has been transferred from the second guide to the conveyor for the defiber magazines.



3,561,585
ARTICLE HANDLING APPARATUS

Alan K. McCombie, London, England, assignor to Molins Machine Company Limited, London, England, a corporation of Great Britain

Filed May 7, 1969, Ser. No. 822,385
Claims priority, application Great Britain, May 10, 1968, Feb. 28, 1969, 22413/68;10941/69
Int. Cl. B65g *47/44, 15/62*
U.S. Cl. 198—69 **9 Claims**



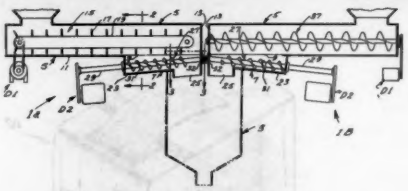
This invention is mainly concerned with a sensor for controlling one of two conveyors extending horizontally in opposite directions from a junction which may, for example, be a T junction into which cigarettes are delivered in an upward stream. The sensor consists of two sensor members which rest on the cigarettes at the junction and which both control a single speed-regulating mechanism controlling the speed of one of the conveyors. Each sensor member is particularly sensitive to a drop in the level of the cigarettes above the end of one of the conveyors, and the arrangement is preferably such that the position of the speed-regulating mechanism is determined by whichever sensor member is lower.

3,561,586
APPARATUS FOR FEEDING FLUENT DRY MATERIAL

Patrick J. Sweeney, 1340 N. Second St., Chillicothe, Ill. 61523

Filed June 9, 1969, Ser. No. 831,545
Int. Cl. B65g *37/00*
U.S. Cl. 198—75 **8 Claims**

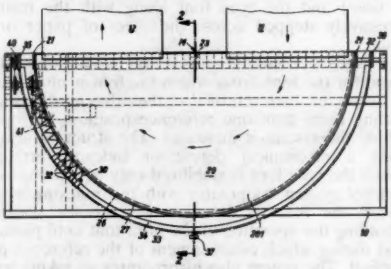
Apparatus for feeding fluent dry material comprising two conveyors, one positioned above the other, the upper conveyor being adapted to feed material to the lower conveyor, and the two conveyors having a common discharge. The upper conveyor is operable to feed material forward at a relatively high rate, first filling the lower conveyor, and then continuing to feed the material forward into the discharge. As the quantity of material fed approaches a quantity somewhat less than a desired quantity, the upper conveyor is stopped. Then the lower conveyor, which is adapted to feed the material at a relatively low controllable rate, is operated to deliver the material into the common discharge to bring the total amount delivered up to the desired quantity.



3,561,587
CONVEYOR BELT TURN

Fritz Schausten, Aachen, Germany, assignor to Leonard Monheim, Aachen, Germany

Filed Sept. 4, 1968, Ser. No. 757,258
Claims priority, application Germany, Sept. 4, 1967, P 15 56 083.5; Sept. 4, 1967, P 15 56 084.6
Int. Cl. B65g *15/02*
U.S. Cl. 198—182 **8 Claims**



A conveyor belt turn for diverting the path of a conveyor through a given angle, adapted to transport small separate articles supplied in a plurality of parallel rows. A smooth conveying surface is constituted by a sheet being circular or circular-ring shaped. At the feed and delivery ends the sheet is passed round nosing rollers of same diameter. The endless free outer edge of sheet is provided with a series of eyelets for the connection of resilient means being attached to a round link chain engaging a guide rail.

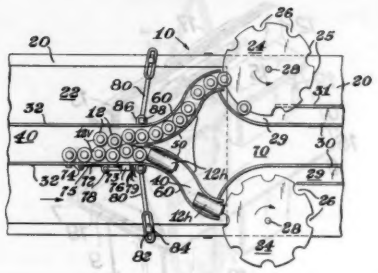
3,561,588
INFEED TRAP DEVICE

James R. Nash, Zionsville, Ind., assignor to The Dow Chemical Company, Midland, Mich., a corporation of Delaware

Filed Nov. 4, 1968, Ser. No. 772,997
Int. Cl. B65g *43/00*
U.S. Cl. 198—232 **13 Claims**

An improved device for guiding the transfer of an article, such as bottle, from a continuous supply conveyor to a discontinuous indexing device, such as a star wheel, is described. The device comprises a pair of opposed guide rails which define an S-shaped path adapted to permit upright articles to pass along the path, while having dimensions and a configuration adapted to prevent fallen articles from reaching the index device by contacting a fallen article on at

least three points on two sides thereof. Means for stopping the conveyor or star wheel, or diverting the flow of articles to



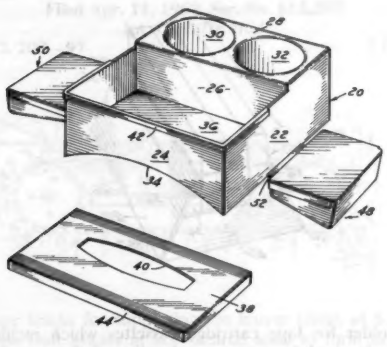
one or another of a plurality of star wheels are also described.

3,561,589

ARTICLE HOLDER FOR MOTOR VEHICLE BODY

Daniel C. Larkin, Jr., Orchard Lake; Edwin C. Fuller, Dearborn Heights, and Stanley W. Prenosil, Rochester, Mich., assignors to The Crest Manufacturing Company, Southfield, Mich.

Filed May 8, 1969, Ser. No. 823,070
Int. Cl. B60n *3/08, 3/10, 3/12;* B60r *7/00;* B65d *25/00*
U.S. Cl. 206—19.5 9 Claims



A one-piece molded plastic tray having compartments therein adapted to contain articles such as drinking glasses, cleansing tissues, etc. the lower edge portion of which is contoured to be seated upon the longitudinal tunnel hump of an automobile body, with weighted receptacles integrally hinged to opposite sides of the container having sharp prongs on their lower surfaces adapted to engage the tunnel hump covering for retaining the device in position despite forces acting thereon due to sudden starts and stops and cornering of the automotive vehicle.

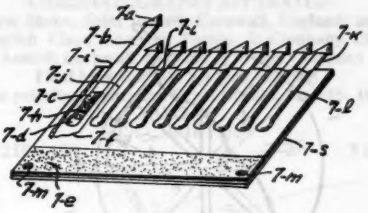
3,561,590

SAFE FROM BURNS AND WATERPROOF MATCH HOLDER

Tiburcio Coria Lopez, 86-35 Queens Blvd., Elmhurst, N.Y.

Filed Feb. 28, 1969, Ser. No. 803,483
Int. Cl. A24f *27/20*
U.S. Cl. 206—34 3 Claims

A waterproof safety match holder for self-igniting matches having the self-igniting match retained in individual hermetically and electronically sealed waterproof cells with a portior of the match stems protruding from the cells to cause ignition of a match in its cell when it is being withdrawn therefrom. All protruding match stems and pull out heads are covered with a relatively thin film of latex to fully waterproof the entire match and thereby providing safe use and preventing sparks when said match is withdrawn already ignited.

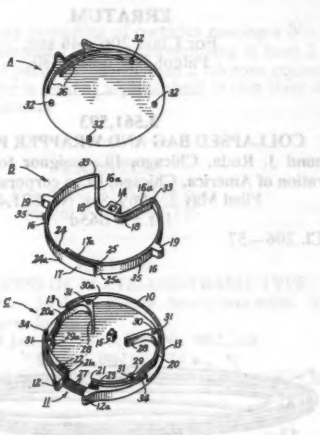


3,561,591

SAFETY DISPENSER

Edward Henderson, 220 Central Park, New York, N.Y. 10019

Filed June 16, 1969, Ser. No. 833,304
Int. Cl. B65d *83/04, 43/20*
U.S. Cl. 206—42 9 Claims



A safety dispenser for pharmaceutical products, or the like includes a container having an opening normally closed by two gates, one at each end of said opening, said gates being independently slidable longitudinally to bring their free ends into and out of overlapping closing position across the opening. Said gates are individually biased toward closing position by spring means formed integrally therewith. Both gates must be held open at the same time to permit passage of articles through the opening.

3,561,592

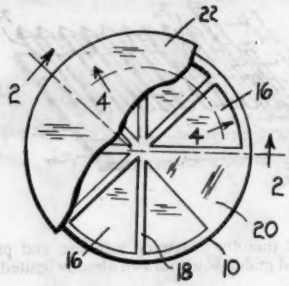
PILL DISPENSER

Dorothy M. McCool, 118 20 N. W. Thompson Road, Portland, Oreg. 97229

Filed Feb. 10, 1969, Ser. No. 798,011
Int. Cl. B65d *83/04*
U.S. Cl. 206—42 4 Claims

A container portion has a number of dividing walls to form sector-shaped compartments and a similarly shaped false compartment. A cover is rotatably mounted on the container portion and has an outlet aperture arranged to be aligned with one of the compartments at a time for removal of a pill therefrom. Each of the compartments has an identifying inscription designating the time that a pill is to be taken, whereby a patient can preload the compartments with pills and then take the pills as designated on the compartments. When the pill dispenser is not in use, the cover is turned such that the outlet aperture therein is in registry with the false

compartment. The cover has a down-turned flange and is held rotatably on the container portion by a rib and groove connection. In some embodiments the aperture in the cover



may extend partly into the flange to form a window at the side of the container portion in which case the identifying inscriptions are provided on the side surface of the container.

ERRATUM

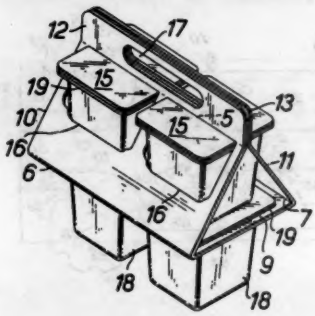
For Class 206—46 see:
Patent No. 3,562,480

3,561,593
COLLAPSED BAG AND WRAPPER PACKET
Raymond J. Ruda, Chicago, Ill., assignor to Bagcraft Corporation of America, Chicago, Ill., a corporation of Illinois
Filed May 2, 1969, Ser. No. 821,430
Int. Cl. B65d
U.S. Cl. 206—57 **10 Claims**

A collapsed bag and wrapper packet comprises a collapsed bag made from a thin, pliable material and which in and of itself tends to be limp and difficult to handle in a manner to maintain it in the collapsed condition, with a multiturn wrapper sheet of a material substantially stiffer and more self-sustaining than the material of the bag wrapped about the collapsed bag. A substantial portion of the bag is retainingly intercalated with turns of the wrapper. A substantial portion of the bag may be turned on itself within the wrapper, thereby enabling the wrapper to be substantially shorter than the length of the bag or a plurality of bags in a separable string.

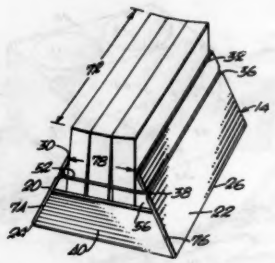
3,561,594
CARDBOARD BLANK
Arne Jorgensen, Korsor, Denmark, assignor to Pakko-Tryk A/S, Copenhagen V, Denmark, a company of Denmark
Filed Oct. 3, 1968, Ser. No. 764,885
Claims priority, application Denmark, Oct. 10, 1967, 5034/67
Int. Cl. B65d *71/00*
U.S. Cl. 206—65 **7 Claims**

A wraparound cover sleeve for cuplike packages with rim flanges and lids has a base panel with at least one aperture for receiving a cup with its rim flange engaging the base panel about the aperture, a second cup being superimposed



on the first cup and held in place by up-folding sidewall panels having cup-engaging formations.

3,561,595
TAPE CARTRIDGE HOLDER
John H. Weggeland, 401 E. Leland Heights Blvd., Lehigh Acres, Fla. 33936
Filed Nov. 26, 1968, Ser. No. 787,288
Int. Cl. B65d *71/00*
U.S. Cl. 206—65 **8 Claims**



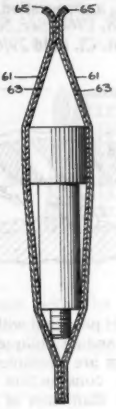
A holder for tape cartridge cassettes which includes a receptacle sized to receive a plurality of the cassettes in stacked, side-by-side relation and which receptacle includes sidewalls which are hingedly connected to the floor of the receptacle so as to expand when the tapes are tilted in a common direction which serves to expose the nameplates so that a user may identify the cassette which he desires to utilize without the necessity of removing all of the cassettes from the holder.

3,561,596
PACKAGING FOR HYPODERMIC SYRINGES, NEEDLES AND THE LIKE
James J Knox, Avenel, N.J., assignor to Knox Laboratories Inc., Rahway, N.J., a corporation of New Jersey
Filed May 20, 1969, Ser. No. 826,143
Int. Cl. A61b *17/06*
U.S. Cl. 206—63.2 **35 Claims**

A coordinated system of interchangeable hypodermic syringe components is described wherein there are provided:

1. A plunger shaft element comprising a hollow shaft containing a hypodermic needle and having means for releasably attaching the shaft to a plunger and, optionally, a plunger; and
2. A syringe barrel element optionally having a plunger disposed therein, a seal for the needle-receiving tip

thereof and containing a parenteral medicament between said seal and said plunger.

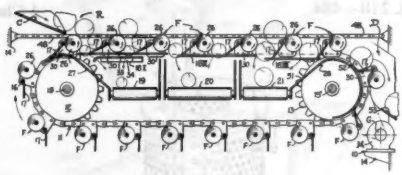


Each of these elements may be individually packaged in a sterile form. There is also described a packaged prefilled hypodermic syringe assembly.

3,561,597
GAUGING AND AGITATOR MEANS FOR DROPOUT-TYPE FRUIT GRADER

William Dudley Youngblood, 404 Calero Ave., San Jose, Calif.

Filed Apr. 11, 1969, Ser. No. 815,397
Int. Cl. B07c *5/04*
U.S. Cl. 209—97 **5 Claims**



Gauge tracks for supporting the louver plates of a drop-flap-type fruit grader at any desired level to form dropout openings of various sizes in combination with an agitator for agitating a promiscuous mass of fruit therebetween to assure separation of the fruit according to size determined by the openings thus formed.

3,561,598
METHOD FOR DISPOSING OF SLUDGE FROM SEWAGE AND INDUSTRIAL WASTES

Alexander S. Goldberg, 84 Locust Ave., Millburn, N.J. 07041

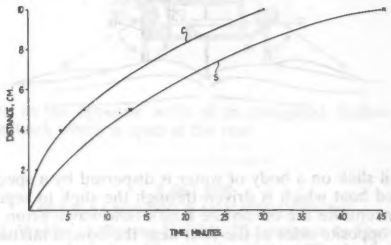
No Drawing. Filed Oct. 10, 1969, Ser. No. 865,499
Int. Cl. C02c *3/00*
U.S. Cl. 210—10 **1 Claim**

An economical process for instantly disposing of sludge from sewage and industrial wastes and manufacturing a useful product therefrom, comprises reducing suspended solids in the sludge and wastes to a concentration of less than one percent by dilution to form a slurry, oxidizing the slurry, rapidly filtering the oxidized slurry and drying it on a paper making machine which rolls the dried residue onto a roller. The method eliminates odors and produces a product useful as a synthetic top soil or soil conditioner or as a paperlike product, useful for packing carton liners. The process also eliminates the previously required capital investment in digester equipment, reduces operating and chemical costs and reduces sludge to a form in which it can be inexpensively shipped or incinerated.

3,561,599
CHROMATOGRAPHY APPARATUS

Brian Eric Sheen, Saint Austell, Cornwall, England, assignor to English Clays Lovering Pochin & Company Limited, Saint Austell, Cornwall, England, a British Company

Filed May 7, 1969, Ser. No. 822,545
Claims priority, application Great Britain, May 15, 1968, 23183/68
Int. Cl. B01d *15/08*
U.S. Cl. 210—198 **7 Claims**



A kaolinitic clay consisting of particles passing a No. 270 mesh A.S.T.M. Standard sieve and comprising at least 2 percent by weight of particles smaller than 2 microns equivalent spherical diameter is used as an adsorbent in thin layer chromatographic apparatus.

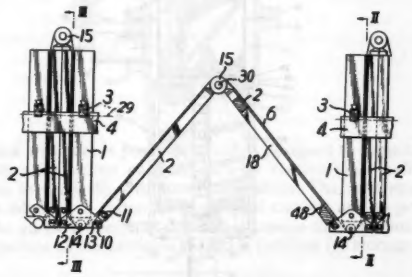
ERRATUM

For Class 210—224 see:
Patent No. 3,562,155

3,561,600
FILTER PRESS OF PLATE-AND-FRAME TYPE

Ken-Ichiro Kurita, 36-4, 5 chome Senriyama-nishi, Suita, Osaka Prefecture, Japan

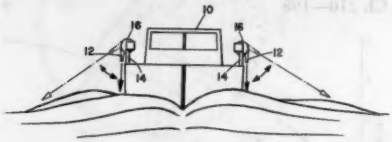
Filed Jan. 12, 1970, Ser. No. 002,268
Int. Cl. B01j *25/34*
U.S. Cl. 210—225 **12 Claims**



A filter press is of a type which comprises filter plates and filter frames alternately arranged between a stationary end plate and a movable end plate with filtering cloth disposed between the filter plates and filter frames facing each other, the filtering elements being adapted to be pressed together by the movable end plate for filtration, the filter plates being adapted to be separated from the filter frames for the removal of cake. Each frame unit comprises two filter frames hingedly connected together at their upper portions and adapted to be opened in inverted V-shape. The lower portions of the frames are respectively connected to the lower opposite sides of the adjacent plates by means of links. When one filter plate is released, the following frame unit is opened

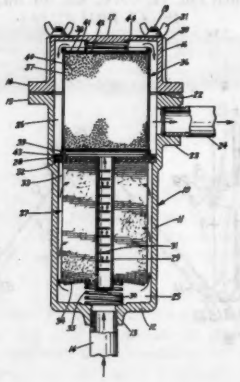
to allow the cake to drop automatically from the cake chamber in the unit.

3,561,601
OIL SLICK DISPERSION APPARATUS
William H. McNeely, San Diego, Calif. (c/o Ara-Chem. Inc., 808 Gable Way El Cajon, Calif. 92020)
Filed Oct. 24, 1969, Ser. No. 869,015
Int. Cl. C02b *9/02*; E02b *15/04*
U.S. Cl. 210—242 3 Claims



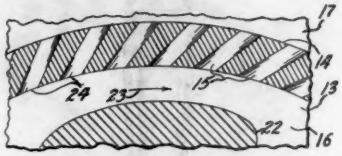
An oil slick on a body of water is dispersed by a specially equipped boat which is driven through the slick to separate and concentrate the oil on the boat's bow wave. From nozzles on opposite sides of the boat near the bow, a mixture of water and a chemical dispersant is directed against the oil as a high pressure jet in a cyclically oscillating path sweeping across the bow wave generally perpendicular to the direction of travel. The rate of oscillation is sufficiently fast to apply the dispersant over all of the oil in the vicinity of the boat and due to the particular oscillating action, a concentration of dispersant is applied close to the boat where the oil is heaviest on the bow wave.

3,561,602
LIQUID FILTER
Donald H. Molitor, Farmington, Minn. (c/o Samcor, Inc., 836 W. 79th St., Bloomington, Minn. 55420)
Filed Dec. 18, 1968, Ser. No. 784,643
Int. Cl. B01d *25/06*; C02b *1/26*
U.S. Cl. 210—266 8 Claims



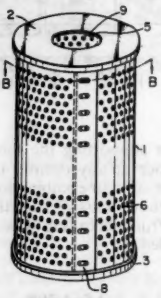
A liquid filter having a casing with liquid inlet and outlet and characterized by a filter element comprised of a multitude of absorbent cellulosic cloth discs, such as terry cloth, in compressed stacked face-to-face relation around a tube disposed between the inlet and outlet. The tube is open at one end and closed at the other and perforated along its length. The liquid to be filtered is forced to pass radially between adjacent cloth discs between the perimeters of the discs and the tube. Dissolved iron is removed from water passed through the filter if the cloth discs are saturated with potassium permanganate.

3,561,603
PULP SCREEN OR THE LIKE
Salomon M. Salomon, Madison, Wis., assignor to Beloit Corporation, Beloit, Wis., a corporation of Delaware
Filed Oct. 8, 1968, Ser. No. 765,815
Int. Cl. B01d *29/04*
U.S. Cl. 210—415 1 Claim



A pulp screen plate is provided with screening holes of circular cross section extending obliquely therethrough so that elliptical hole openings are presented to the fluid material being screened. This construction encourages individual fibers longer than the diameters of the screening holes to enter and pass through those holes without increasing significantly the passage of unwanted lumps or flakelike particles therethrough. In applications employing hydrofoil impellers or the like, the holes are disposed in relatively tangential relation to the direction of movement of the adjacent strata of the fluid material being processed, thereby minimizing velocity losses to increase the capacity and efficiency of the screening machine.

3,561,604
FILTER ELEMENT
Kokichi Yotsumoto, Sagamihara-shi, Japan, assignor to Caterpillar Mitsubishi Ltd., Chiyoda-ku, Tokyo, Japan
Filed Dec. 31, 1968, Ser. No. 788,244
Claims priority, application Japan, Jan. 26, 1968, 43/4731
Int. Cl. B01d *27/08*
U.S. Cl. 210—484 4 Claims

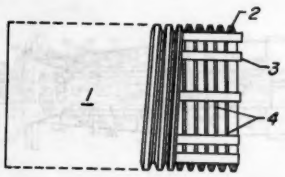


A filter element comprising an outer wrapper, an improvement wherein pores are provided in juxtaposed relationship to each other along a joint of the outer wrapper.

3,561,605
SELF-CLEANING TUBULAR SCREEN
David M. Likness, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill., a corporation of Delaware
Filed Dec. 30, 1968, Ser. No. 787,708
Int. Cl. B01d *27/08*
U.S. Cl. 210—497.1 2 Claims

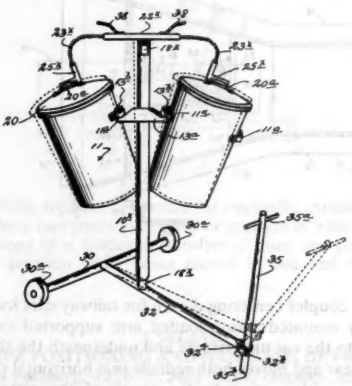
A self-cleaning tubular screen adapted for dewatering or classifying particulates which embodies a slotted construction

to provide a self-cleaning V-Slot that enlarges in the outward radial direction. The support rods for the tubular screen are located on the inner periphery of the tubular screen and attached to the wide face of wedge-shaped wire so as to



preclude any interference with the slot opening. In a preferred arrangement the support rods are spiralled in order to enhance or improve particulate flow longitudinally through the screen.

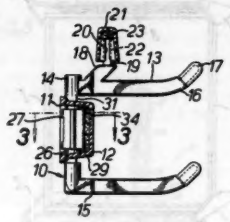
3,561,606
GARBAGE CAN HOLDERS
Ian A. Stewart, 10736 Maple Glen Crescent, Calgary, 30 Alberta, Canada
Continuation-in-part of application Ser. No. 598,993, Dec. 5, 1966, now abandoned. This application Apr. 21, 1969, Ser. No. 826,758
Int. Cl. B60p *1/64*
U.S. Cl. 211—84 **12 Claims**



Holders for plural refuse cans in which upstanding posts have opposed, hook-ended arms for engaging one of the usual carrying handles of a refuse can for canting the can angularly whereby opposed cans diverge upwardly; the hook arms substantially preventing rocking of the canted cans; and means to maintain a refuse can cover to the post; and in which the post is vehicular.

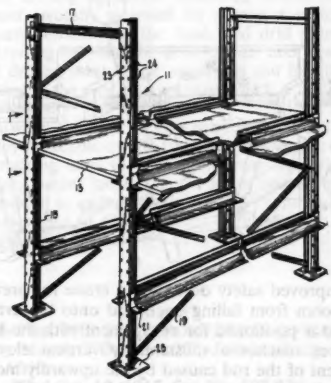
3,561,607
NECKTIE RACK
Dennis Thomas Deeley, Birmingham, England, assignor to Laughton & Sons Limited, Birmingham, England, a British Company
Filed Feb. 25, 1969, Ser. No. 802,163
Claims priority, application Great Britain, Mar. 5, 1968, 10,513
Int. Cl. A47f *5/08*
U.S. Cl. 211—96 **3 Claims**

A necktie rack is formed by a linked series of U-shaped tie holders, the base of the U of each holder being pivotally mounted in an aligned pair of rearwardly open recesses



located in the opposite walls of an elongated, hollow, box-shaped back which is open at the rear.

3,561,608
SELF-ALIGNING RACK STRUCTURE
John J. Weider, Arlington Heights, Ill., assignor to Speedrack Incorporated, Skokie, Ill., a corporation of Illinois
Filed Dec. 26, 1967, Ser. No. 693,207
Int. Cl. A47f *5/00*
U.S. Cl. 211—176 **7 Claims**

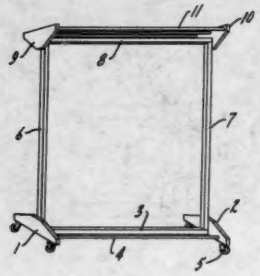


A rack structure is provided which is designed to support a plurality of material carriers such as conventional pallets thereon in vertically structured disposition. The rack structure is adapted to support the material carriers and to position the carriers generally centrally between the columns of the structure as the carrier is placed in position for storage.

3,561,609
GARMENT RACK AND SQUARE TUBE ASSEMBLY THEREFOR
Donald W. Doherty, Park Ridge; William P. Crockett, Jr., and William P. Crockett, III, administrator, Park Ridge, Ill., assignors to Queen Manufacturing Company, Inc., Chicago, Ill., a corporation of Illinois
Filed July 29, 1968, Ser. No. 749,259
Int. Cl. A47f *5/10*; E04g *7/02*; F16b *7/22*
U.S. Cl. 211—177 **7 Claims**

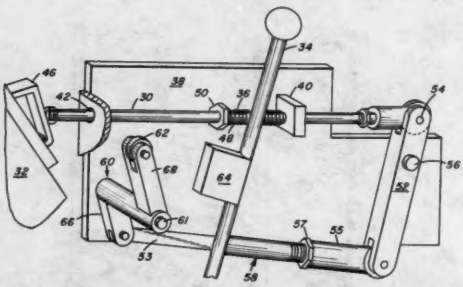
A garment rack and means of assembling such structures involving angularly disposed square tubing, including adapters enclosed and concealed within the tubing and locked thereinto, the adapters being effective to lock tubing elements together and to lock external elements thereto, the

adapters being formed of identical individual parts joined in the desired angular relationship prior to concealment within



the tubular element, the entire assembly being accomplished without the use of tools.

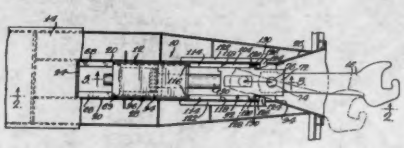
3,561,610
BOOM STOP
Wilfred F. Buckert, and Frederick L. Thompson, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y., a corporation of New Jersey
Filed Apr. 28, 1969, Ser. No. 819,544
Int. Cl. B66c *13/48*
U.S. Cl. 212—39 **4 Claims**



An improved safety device on a crane for preventing the crane boom from falling backward onto the crane cab. A push rod is positioned for engagement with the boom when the boom reaches a substantially vertical elevation. The movement of the rod caused by the upwardly moving boom is multiplied through a system of levers and imparted to a contact lever which pushes the boom control stick into a neutral position thereby stopping the boom before it moves past the maximum safe elevation.

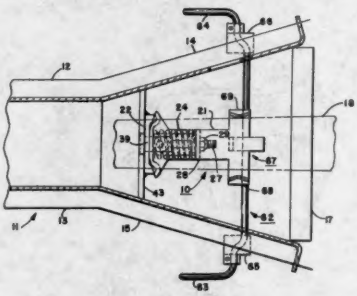
3,561,611
END OF CAR IMPACT ABSORBING DEVICE
Vaughn T. Hawthorne, Mount Prospect, and James T. Smith, Wilmette, Ill., assignors to Keystone Railway Equipment Company, Chicago, Ill., a corporation of Delaware
Filed Apr. 10, 1968, Ser. No. 720,015
Int. Cl. B61g *9/02, 9/06*
U.S. Cl. 213—8 **10 Claims**

The end of car impact absorbing device includes a single acting impact absorbing cylinder-piston combination positioned within a reservoir and having a piston rod projecting from the rod end of the combination to be affixed to a slidable coupler yoke which in turn is connected to a coupler. The reservoir, cylinder-piston combination, piston rod, and coupler yoke are mounted within an inverted channel shaped draft sill of a low deck flat car. The reservoir and cylinder are mounted so that their combined head end in buff abuts against a pair of abutment plates secured to the inner faces of the vertical draft sill walls. The coupler yoke is slidably supported on wear pads and is adapted to abut against a pair of stop blocks carried on the inner faces of the draft sill walls to limit movement in buff. The coupler yoke projections are also adapted to abut wear pads carried on the inner faces of the draft sill walls and the inwardly projecting ends of the



draft bars mounted on the outer faces of the draft sill walls in draft. A return spring assembly acts between the draft sill and the coupler yoke to restore the yoke and coupler after buff movement. If desired bolts having elastomer covered heads may be carried by the yoke projections to abut against the wear pads in normal and draft position.

3,561,612
RAILWAY CAR COUPLER CENTERING DEVICES
Thomas La Boda, Chesterland, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio, a corporation of Ohio
Filed Dec. 19, 1968, Ser. No. 785,167
Int. Cl. B61g *7/10*
U.S. Cl. 213—20 **2 Claims**

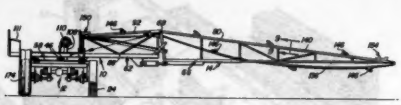


A car coupler centering device for railway cars including a pivotally mounted spring loaded arm supported cantilever-fashion to the car underframe and underneath the shank of a railway car and moves both radially in a horizontal plane and vertically with respect to the shank of the coupler. This device includes a spring loaded arm movable about a pivot point which is forwardly of the coupler pivot point and in the direction of the coupler head. The device is mounted independently of the coupler so that when the coupler shank is moved transversely it will effect a foreshortening of the spring, thus further compressing the spring. This increased applied spring load is transferred to an offset reaction point according to the direction of the coupler shank displacement from its central or neutral position.

3,561,613
APPARATUS FOR SHIFTING IRRIGATION PIPE
Van N. Moad, 122 12th Ave. South, Nampa, Idaho 83651
Filed July 16, 1968, Ser. No. 745,203
Int. Cl. B65g *41/00*
U.S. Cl. 214—1 **12 Claims**

An apparatus including a mobile platform having a generally horizontally disposed boom supported at a first inner end portion of the boom from the platform and extending transversely outwardly from the platform at the second

outer end portion thereof. The boom includes conveying means for supporting irrigation pipe sections placed thereon by a first workman and conveying the pipe sections from the outer end portion of the boom to the inner end portion thereof for removal therefrom by the operator of said plat-



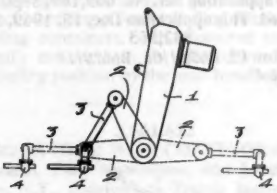
form and placement upon a rearwardly and downwardly inclined chute supported adjacent the inner end portion of the boom, the platform being adapted to be advanced over a field to be irrigated in a path extending transversely of the boom.

3,561,614

ARTICLE TRANSFER APPARATUS ADAPTED TO CYCLICALLY TRANSFER AN ARTICLE FROM A POSITION TO ANOTHER POSITION

Yoshitomo Tezuka, and Munehiro Namba, Tokyo, Japan, assignors to Kabushiki Kaisha Aida Tekkosho, Kanagawa-ken, Japan

Filed Apr. 3, 1969, Ser. No. 813,205
Int. Cl. B66c *1/02*
U.S. Cl. 214—1 **3 Claims**



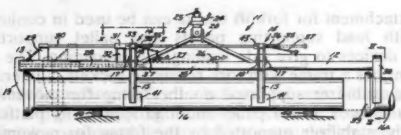
An article transfer apparatus for cyclically transferring an article from one position to another position in which an article retained in a holder is transferred from one position to another position while being moved in one and the same plane.

3,561,615

PIPE POSITIONING AND HANDLING DEVICE

Terry A. Forsberg, 1216 W. Jolly Road, Okemos, Mich., and Robert E. Smith, 3598 Stagecoach Drive, Okemos, Mich.

Filed July 16, 1969, Ser. No. 842,173
Int. Cl. B23p *19/04*
U.S. Cl. 214—1 **5 Claims**



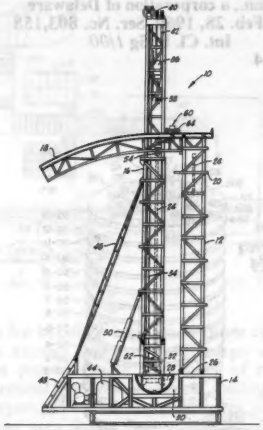
An hydraulically actuated pipe manipulating structure wherein a single hydraulic element imparts axial movement and cooperating selected gripping and relaxation of grip in accord with desired location of piping.

3,561,616

WELL DRILLING APPARATUS

Kenneth H. Eddy, Jefferson County, Tex., and Kenneth H. McGill, Jefferson County, Tex., assignors to Dresser Industries, Inc., Dallas, Tex., a corporation of Delaware

Filed July 29, 1969, Ser. No. 845,758
Int. Cl. E21b *19/14*
U.S. Cl. 214—2.5 **9 Claims**



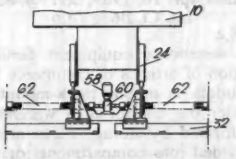
The well drilling apparatus described herein includes a drilling mast pivotally mounted on a base, a separate pipe racking mast mounted on the base, and drill pipe transfer means extending between the drilling mast and pipe racking mast. The drilling mast of the apparatus can be tilted at an angle relative to the pipe racking mast which is disposed substantially vertically. The transfer means includes a track extending between the pipe racking mast and the drilling mast and a trolley moveable on the track for moving the drill pipe from the racking mast to the drilling mast and vice versa. Pipe engaging means located on the lower end of the drilling mast is provided to engage the lower end of the drill pipe so that the lower end of the drill pipe is retained on the well bore axis during at least a portion of the movement between the masts.

3,561,617

MEANS FOR THE TRANSPORTATION OF GOODS

John Henry Marsh, P.O. Box 6202, Johannesburg, Republic of South Africa

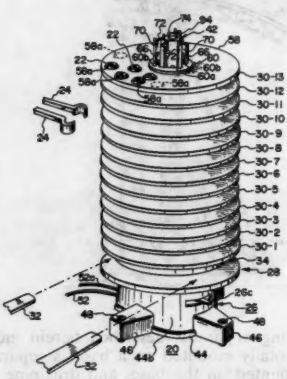
Filed Oct. 16, 1967, Ser. No. 693,034
Claims priority, application South Africa, Oct. 14, 1966, 66/6234
Int. Cl. B63b *27/16*
U.S. Cl. 214—15 **3 Claims**



The invention provides for a means for transporting goods in which the goods are loaded in containers supported upon and detachable from wheeled chassis. The means further provides for cargo holding means having at least two levels, one level being for permitting the wheeled chassis to enter the cargo holding means, and another level being for stowing the containers after being detached from the wheeled chassis. A plurality of hoisting devices are operable between the levels

to hoist the containers from one level to another. The hoisting devices include clamps for engaging the corners of containers. The cargo holding means may be provided on land or on a ship.

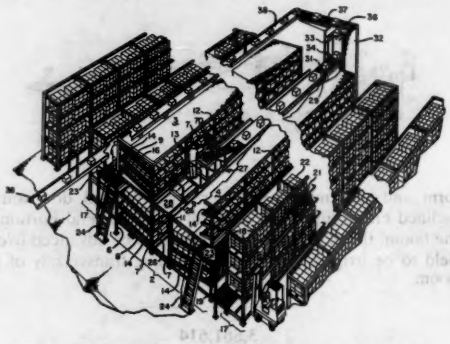
3,561,618
ARTICLE STORAGE AND TRANSFER ARRANGEMENT FOR PROGRAMMED MANIPULATORS
Torsten H. Lindbom, Newtown, Conn., assignor to Unimation, Inc., Bethel, Conn., a corporation of Delaware
Filed Feb. 28, 1969, Ser. No. 803,158
Int. Cl. B65g *1/00*
U.S. Cl. 214—16.4 **6 Claims**



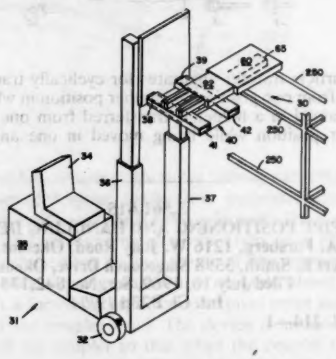
A series of programmed manipulators each having an article transfer arm are provided at different work stations to perform different work operations on a batch of articles. The articles are stored in and transferred between work stations in a magazine assembly which is capable of maintaining all of the parts in a predetermined orientation at each work station. Furthermore, the magazine assembly cooperates with the programmed manipulator at a particular work station to sequentially position each article in the batch to a predetermined position and with a predetermined orientation so that the article can be grasped by the manipulator, worked on, and redeposited in the magazine without human assistance.

3,561,619
WAREHOUSING SYSTEM AND APPARATUS THEREFOR
Stanley M. Weir, Palo Alto, Calif., assignor to FMC Corporation, San Jose, Calif., a corporation of Delaware
Original application Jan. 15, 1968, Ser. No. 679,942, now Patent No. 3,447,699, dated June 3, 1969. Divided and this application Apr. 16, 1969, Ser. No. 851,110
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 **1 Claim**

Power-driven warehouse equipment facilitates accurate and rapid selection of articles of commerce for distribution to warehouse outlets. A mobile track-mounted order-selection vehicle under the control of a warehouseman moves along an aisle formed by storage racks arranged in rows. Each rack is divided into compartments or slots, each slot containing cases, cartons or containers of a designated article of commerce. As the vehicle moves along the slots, selection of type and quantity of containers is made in accordance with a predetermined program carried by the driver of the vehicle in accordance with order picking instructions displayed for him by a display unit on the vehicle. Following selection of the requisite type and quantity of containers, each container is automatically labeled with a label which indicates the type, quantity and destination information imprinted thereon according to a program, and the containers are mechanically transported to an area where they are automatically diverted to accomplish assembly of orders in accordance with their proper destination.

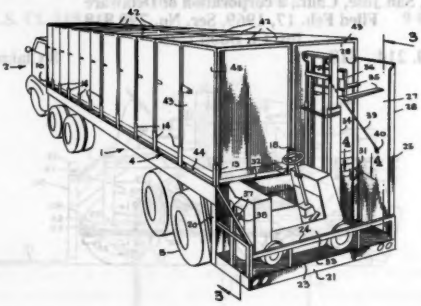


3,561,620
SIDE-LOADING ATTACHMENT FOR FORK-LIFT TRUCKS
Wilfred Ernest Willis, 3633 Jackson St., San Francisco, Calif.
Continuation of application Ser. No. 669,169, Sept. 20, 1967, now abandoned. This application Dec. 15, 1969, Ser. No. 882,363
Int. Cl. B65g *1/06*; B66f *9/14*
U.S. Cl. 214—16.4 **27 Claims**



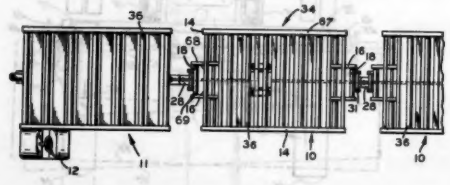
An attachment for forklift trucks can be used in conjunction with load supporting pallets and pallet supporting storage devices to give side loading and unloading. The attachment has a frame with fork receiving sockets, a laterally disposed stabilizer supported on the frame for movement laterally thereof, and a pallet-and-load supporting platform above the stabilizer supported by the frame for movement laterally thereof. There is a mechanism for moving the stabilizer to either side of the frame where it lies wholly beyond the sides of the forklift truck for engagement with and rest upon a pallet supporting storage device on which a pallet and its load are to be deposited, and a mechanism for moving the platform out where it lies wholly beyond the forklift truck and above the stabilizer only after the stabilizer is fully extended and is properly supported by the pallet-supporting storage device.

3,561,621
TRANSPORT VEHICLE
William C. Rivers, Jr., 2848 Village Grove Drive S., Jacksonville, Fla. 32217
Filed Mar. 19, 1969, Ser. No. 808,531
Int. Cl. B65g 67/02; B60p 1/64
U.S. Cl. 214—38 5 Claims



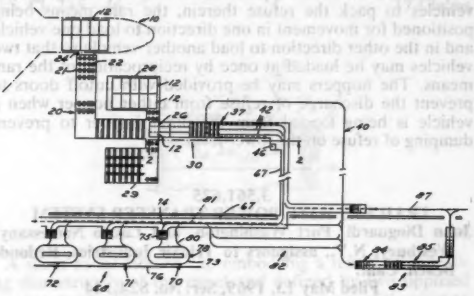
A transport vehicle having a load bed with upstanding guides defining container positions on the bed, and containers having downwardly converging pallet bottoms for automatic orienting at the container positions. The vehicle has an after deck carrying a load-handling machine for loading and unloading containers, with a pivoted machine loading ramp pivotally mounted on the after deck and movable to and from loading position by the load-handling machine.

3,561,622
CARGO TRAILER WITH CONVEYOR ROLLERS
John Dioguardi, Port Washington, and Laszlo Nemessanyi, Westbury, N.Y., assignors to Tridair Industries, Redondo Beach, Calif., a corporation of California by mesne assignments to
Filed May 13, 1969, Ser. No. 824,133
Int. Cl. B65g 67/02; B60p 1/00
U.S. Cl. 214—38 6 Claims



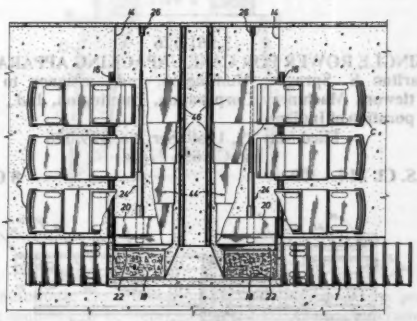
A self-tracking trailer including a chassis with a running gear, identical coupling means at each end, conveyor rollers with interconnected driving means journaled transversely on the chassis so that torque applied to one roller will produce conjoint rotation to all rollers, means for transferring power from the drive vehicle to the rollers in the trailer and including a rotatable drive sleeve with a noncircular through bore at each end of the trailer and a flexible shaft extending in driving relation between the sleeves, a pair of stub shafts with friction wheels fast thereon, a gear on each stub shaft, a drive gear fast on the flexible shaft engaging said gears to drive the friction wheel in opposite directions.

3,561,623
ARTICLE-HANDLING SYSTEM FOR BAGGAGE OR OTHER CARGO
Edward W. McCaul, Bloomfield Hills, Mich., assignor to Jervis B. Webb Company, a corporation of Michigan
Filed Jan. 7, 1969, Ser. No. 789,490
Int. Cl. B65g 43/00
U.S. Cl. 214—11 20 Claims



A system for handling baggage or other cargo of a vehicle such as an aircraft equipped with cargo containers. Each container is provided with a number of removable cargo trays. A terminal includes a vehicle loading and unloading dock, conveyorized for moving containers, and having a container storage area and a station where trays are unloaded from or loaded into containers. A tray conveyor extends between the container loading and unloading station and a tray transfer station. Carriers of a tray transporting conveyor selectively operate between the transfer station, where trays are automatically transferred to or from the carriers, and tray loading and unloading stations in the terminal. Operation of the system in an unloading direction results in loaded trays being delivered by the carriers to selected unloading loops at a delivery area where carriers circulate until unloaded. In the loading operation of the system, loaded trays are transported by the carriers, transferred to the tray conveyor and forwarded to the container loading station.

3,561,624
TRANSFER STATION EQUIPMENT FOR REFUSE DISPOSAL
Jimmie V. Thurmond, and William A. Ferrari, P.O. Box 14147, San Antonio, Tex. 78214
Filed Dec. 16, 1968, Ser. No. 783,918
Int. Cl. B65g 67/20
U.S. Cl. 214—41 3 Claims



A refuse transfer station at which short-haul collection vehicles discharge refuse to be loaded into long-haul transportation vehicles for removal to a disposal location. The station is provided with upper and lower levels and hoppers into which refuse may be dumped at the upper level to be discharged downwardly to the lower level to load the long-haul vehicles.

Elongated refuse-receiving troughs opening at one end into the hoppers may be provided at the upper level into which refuse is dumped from the collection vehicles and in which pusher blades are movably mounted to push the refuse into the hoppers, and cover means is provided for the troughs which are designed to be extended as the pusher blades are advanced and retracted as the blades are retracted to prevent the dumping of refuse behind the pusher blades.

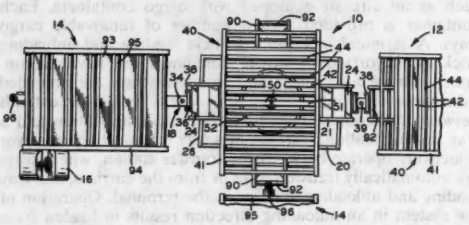
Ram means is mounted beneath the hoppers in position to move refuse from the hoppers horizontally into the long-haul vehicles to pack the refuse therein, the ram means being positioned for movement in one direction to load one vehicle and in the other direction to load another vehicle so that two vehicles may be loaded at once by reciprocation of the ram means. The hoppers may be provided with cutoff doors to prevent the discharge of refuse from either hopper when a vehicle is being loaded from the other hopper to prevent dumping of refuse on the lower level.

3,561,625

TRAILERS WITH POWER TRANSFER SYSTEM

John Dioguardi, Port Washington, and Laszlo Nemessanyi, Westbury, N.Y., assignors to Tridair Industries, Redondo Beach, Calif.

Filed May 13, 1969, Ser. No. 824,144
Int. Cl. B60p *1/52*
U.S. Cl. 214—84 **8 Claims**



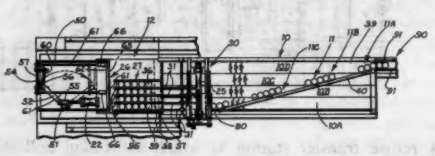
A cargo trailer to be coupled in train to others and to be drawn by a drive vehicle provided with a single power source for the trailers. The trailer includes a chassis with rigidly running wheels and a rectangular platform with cargo conveyor rollers journaled between the platform sides. The several rollers have interconnected drive means so that driving torque applied to one roller will impart conjoint rotation to all. The trailer has a flexible shaft extending over its length, which drives stub shafts journaled in a gear box. Each stud shaft has a shaft which can engage a roller. A king pin pivotally joining the chassis and platform, permitting rotation of the latter to provide a cargo turntable.

3,561,626

SINGLE ROWER FOR CASE UNPACKING APPARATUS

Carlton S. Sprague, Huntington, Ind., assignor to Shuttlework Machinery Corporation, Huntington, Ind., a corporation of Indiana

Filed May 29, 1969, Ser. No. 829,026
Int. Cl. 65b *21/04*
U.S. Cl. 214—309 **8 Claims**



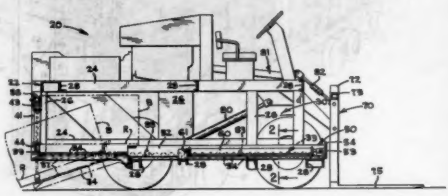
A case unpacker for removing cans from a box and placing them on a conveyor in single file. A vacuum lifting head is movable vertically to engage the cans and deposit them on a platform in a pattern of parallel rows. A pusher bar operates to push the cans off the platform and onto a can conveyor. A blocking bar extends across the can conveyor and is retractable at a given speed to permit the rows of cans to move in order on said can conveyor. The cans are guided into single file by a guide bar extending at an angle across the can conveyor.

3,561,627

LOAD CARRYING DEVICE

John L. Fisher, Campbell, Calif., assignor to FMC Corporation, San Jose, Calif., a corporation of Delaware

Filed Feb. 17, 1969, Ser. No. 799,818
Int. Cl. B60p *1/46*
U.S. Cl. 214—518 **8 Claims**



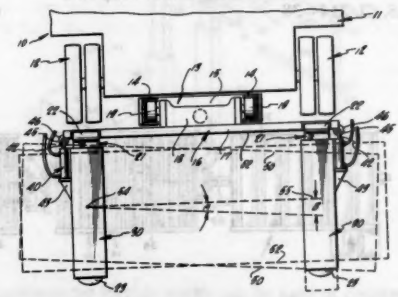
A vehicle is provided with a fork lift at its front end that is adapted to raise boxes one at a time and transfer them to a conveying mechanism that moves the boxes into a tunnel that extends internally of the vehicle longitudinally thereof. A plurality of boxes may be temporarily stored in the tunnel and then discharged from the rear of the tunnel down an inclined ramp.

3,561,628

MOVABLE FORK COVER FOR FORKLIFT TRUCK

Thomas N. Melin, Long Beach, Calif. (1424 24th Ave., Longview, Wash. 98632)

Continuation of application Ser. No. 426,482, Jan. 15, 1965, now abandoned. This application Dec. 14, 1965, Ser. No. 517,883
Int. Cl. B66f *9/14*
U.S. Cl. 214—731 **3 Claims**

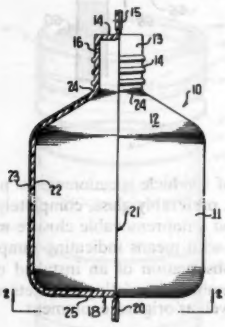


In a forklift truck, at least one, and preferably both, of the horizontal load-supporting tines, which extend forward in cantilever fashion from a vertically movable fork apron, are provided with load-engaging cover members which are selectively movable along the lengthwise of the tines. The cover members are movable independently of each other along their respective forks so that the angular relationship of a load supported on the forks may be adjusted relative to the length of the truck about an axis passing vertically through the load, thereby making it possible to precisely adjust the position of a load supported by the truck relative to a foundation upon which the load is to be supported without moving the truck per se.

3,561,629
LAMINATED OR COATED BLOW MOLDED CONTAINERS

Howard M. Turner, Oak Forest, Ill., assignor to Continental Can Company, Inc., New York, N.Y., a corporation of New York

Continuation-in-part of application Ser. No. 648,356, June 23, 1967, now Patent No. 3,457,337, dated July 22, 1969, which is a division of application Ser. No. 356,411, Apr. 1, 1964, now abandoned. This application Feb. 17, 1969, Ser. No. 799,712
Int. Cl. B65d *23/08*
U.S. Cl. 215—1 9 Claims

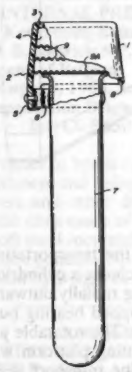


This invention relates to novel blow molded laminated plastic containers formed by extruding a composite plastic tube and expanding the same to a desired configuration within a blow mold cavity, each container including a body wall terminating at one end in a neck and at an opposite end in a bottom wall, a line of flash traversing the bottom wall, the line of flash including a pinched-off portion, the body wall being composed of a plurality of laminates, and the pinched-off portion being composed of at least one less wall than the number of laminates forming the body wall.

3,561,630
SPURT CAP

Seth Morris Smedstad, 4612 102 Ave., Edmonton, Alberta, Canada

Filed Jan. 27, 1969, Ser. No. 794,113
Int. Cl. B65d *51/02*
U.S. Cl. 215—37 3 Claims

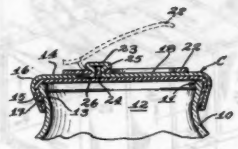


A spurt cap for use with test tubes is provided. It is hollow, open bottomed and has top closure. A spring clip is attached to its bottom edge which clamps it over the test tube mouth. A transverse screen extends across its interior to slow down the movement of fluid spurting out of the tube.

3,561,631
CLOSURE CAP FOR CONTAINERS

John D. Hatfield, Perrysburg, and Richard A. Heaton, Toledo, Ohio, assignors to Owens-Illinois, Inc., a corporation of Ohio

Continuation-in-part of application Ser. No. 579,911, Sept. 16, 1966, now abandoned. This application May 5, 1969, Ser. No. 825,116
Int. Cl. B65d *43/02, 41/10*
U.S. Cl. 215—46 17 Claims

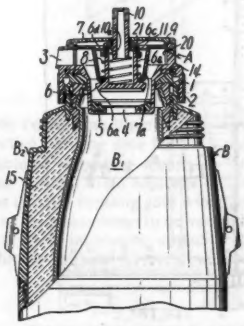


A sheet metal closure cap embodying a tear-strip extending diametrically of the panel and defined by two opposed scores extending from points in the upper areas of the skirt to a zone slightly beyond the cap axis where they are joined together by an arcuate score, there being a pull-ring overlying the tear-strip and secured to the tear-strip near the arcuate score. The pull-ring is plastic (polyethylene) and the invention also includes means for fastening a plastic pull-ring to a tear-strip by a rivet wherein a flanged bushing or a cylindrical collar is disposed in an aperture of the plastic pull-ring and interposed between the plastic and the rivet reinforcing the fastening of the pull-ring to the tear-strip.

3,561,632
AUTOMATIC CLOSURE FOR VACUUM BOTTLES

Nobuo Shirae, Nishinomiya, Japan, assignor to Tiger Vacuum Bottle Industrial Company, Limited, Kadoma, Osaka, Japan

Filed Apr. 22, 1969, Ser. No. 818,346
Int. Cl. B65d *97/20*
U.S. Cl. 215—74 3 Claims

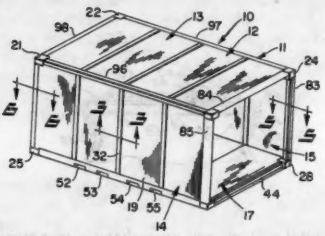


An automatic closure comprises a valve body and a projecting member to be depressed upon the closing operation of a lid or cap of a container. Between the projecting member and the valve body is acting a spring which is provided with a greater spring force than a restoring spring on the valve body. The arrangement is such that when the cap or lid is brought to the extreme of permissible range of closing state, the valve body is brought into contact with a valve seat without effecting compression of the spring. Thus, as far as the cap or lid is closed within the range, the automatic closure can be retained in closed position.

3,561,633
CONTAINER

Robert S. Morrison, Ashtabula, and Edward P. Rebovich, Jefferson, Ohio, assignors to Morrison Industries, Inc., Ashtabula, Ohio, a corporation of Ohio. by mesne assignments

Filed June 5, 1968, Ser. No. 734,619
Int. Cl. B65j 1/02; B65d 9/30, 11/28
U.S. Cl. 220—1.5 12 Claims

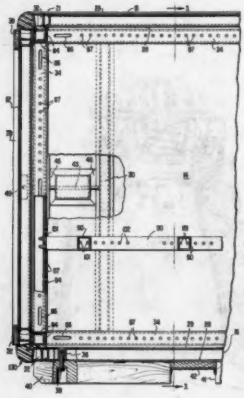


A container for general cargo and the like including an extruded metallic frame having panels of plywood or like material encapsulated with glass reinforced plastic and bonded with a polyurethane adhesive both to the frame and to adjacent panels to form a monolithic boxlike structure.

3,561,634
SHIPPING CONTAINER

Robert A. Meldrum, Bloomsburg, Pa., assignor to Impetus Inc., Chicago, Ill., a corporation of Illinois

Filed Sept. 11, 1968, Ser. No. 767,566
Int. Cl. B65j 1/02; B65d 7/42, 7/14
U.S. Cl. 220—1.5 18 Claims

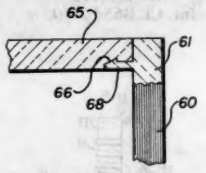


A universal high-strength shipping container having its wall panels supported adjacent their peripheral edges by a parallelepiped skeleton metal frame within the container. The frame is constructed from a plurality of elongated structural members rigidly welded at the corners of the container only, and the wall panels are each removably secured along their edges to the adjacent structural members of the frame. The container may be employed in any orientation, and includes improved means for securing the wall panels in tamper proof, hermetically sealed relation on the frame.

3,561,635
TAMPERPROOF COVER FOR SPEEDOMETER ODOMETERS

Robert C. Henderson, 9763 W. Virginia Drive, Denver, Colo.

Filed Oct. 30, 1968, Ser. No. 771,777
Int. Cl. B65d 25/54; G01c 22/00
U.S. Cl. 220—4 7 Claims

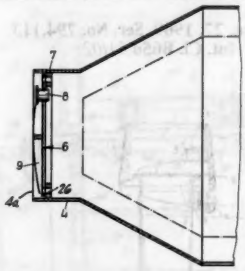


The odometer of a vehicle speedometer is provided with a transparent cover, preferably glass, completely enclosing the number wheels and a nonremovable closure member for the cover is provided with means indicating tampering with the cover on visual observation of an installed odometer. The cover is readily usable on existing odometers of American made vehicles as well as original equipment.

3,561,636
METALLURGICAL TRANSPORT VESSEL CONSTRUCTION

Werner Marxen, Duisburg, and Werner Trost, Duisburg-Wanheimerort, Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany

Filed Sept. 11, 1968, Ser. No. 759,116
Claims priority, application Germany, Dec. 4, 1967, 1,583,244
Int. Cl. B65d 25/24
U.S. Cl. 220—18 3 Claims



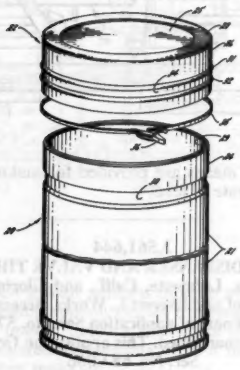
A transport vessel for the transportation of metallurgical melts or molten metals includes a cylindrical ring at each end having a journal extending radially outwardly from each side which engages in open topped bearing bushings on a forked end of a rotatable journal. The rotatable journal is supported on a pedestal on a mounting platform which, for example, may be a wheeled car. The transport vessel includes a ring spaced inwardly from the end of the cylindrical end formation providing a mounting for receiving a detachable end plate which may be secured to the ring, for example, by securing bolts. The end plate is reinforced by intersecting reinforcement ribs, and it includes a mortar charging opening.

3,561,637

CONTAINER AND REUSABLE, RESEALABLE CLOSURE THEREFOR

William McConnell, Helsby, Frodsham, England, assignor to Inland Steel Company, Chicago, Ill., a corporation of Delaware

Filed Aug. 8, 1968, Ser. No. 751,111
Claims priority, application Great Britain, Aug. 8, 1967, 36.298/67
Int. Cl. B65d *41/00*
U.S. Cl. 220—42 8 Claims



A container, particularly one having a container body made of fiber or other synthetic material, and of the type having a slip cover including a skirt adapted to overlap and surround the upper portion of the container body, wherein improved means are provided for reclosing and/or resealing the container by providing a circumferential constricted area in the container body and a complementary circumferential deformable zone in the cover skirt, together with contractible means for deforming said zone into said area on a repetitively usable basis.

3,561,638

BOX OR CONTAINER OF METAL SHEET HAVING A SMALL THICKNESS AND BEING SUBJECTED TO HIGH INTERNAL PRESSURES

Jean B. Morjan, Koekelberg-Brussels, Belgium, assignor to Etablissements J. B. Gabriels S.P.R.L., Koekelberg-Brussels, Belgium, a company of Belgium

Filed Aug. 26, 1968, Ser. No. 755,209
Claims priority, application Belgium, June 14, 1968, 48,034
Int. Cl. B65d *7/42*
U.S. Cl. 220—67 5 Claims

This invention relates to boxes or containers of metal sheet having a small thickness and being provided for storage and distribution of beers and other drinks rich in carbonic gas under pressure, with ends made of rolled sheet having a high yield strength of soft steel recrystallized by annealing and the composition of which contains Nb in the range of 0.015 percent to 0.050 percent by weight of the composition.

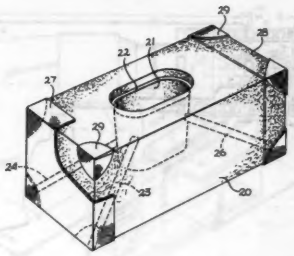
3,561,639

FUEL STORAGE CELL

Donn W. Allen, 5730 Bankfield Ave, Culver City, Calif.

Filed Sept. 5, 1968, Ser. No. 757,598
Int. Cl. B65d *25/14*, *25/34*
U.S. Cl. 220—88 11 Claims

The fuel cell disclosed herein includes a shaped, porous core having an approximate 97 percent void which is covered by an impregnated fabric material so as to adhere to the periphery of the core and to seal the fabric material. The covered core or bladder is enclosed in a metal container having mounting fixtures adapted to detachably connect the fuel cell to supporting structure.

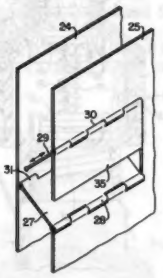


3,561,640

MULTIPLE COLUMN MULTIPLE CHOICE VENDING MACHINE

Daniel P. Thompson, Worthington, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa., a corporation of Pennsylvania

Filed Dec. 10, 1968, Ser. No. 782,597
Int. Cl. B65g *59/00*
U.S. Cl. 221—108 2 Claims



A multiple column multiple choice vending machine having a respective vending gate for each column with removable or selectable diverting means to divert some articles stored in one column to an adjacent column to be vended by the adjacent column vending gate while permitting other articles stored in the one column to be vended by the one column vending gate thus increasing capacity for favorite articles without reducing the total choice of articles.

3,561,641

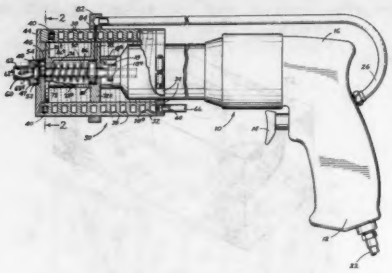
FASTENER SUPPLY DEVICE

Charles E. Kerr, Jr., Hillsboro, Oreg., assignor to Eltec, Inc., Lake Oswego, Oreg., a corporation of Oregon

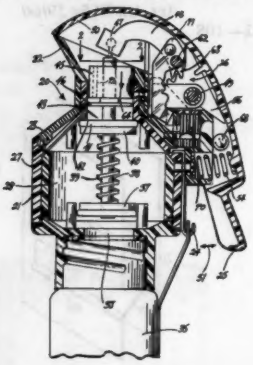
Filed Dec. 19, 1968, Ser. No. 785,176
Int. Cl. B65h *5/00*
U.S. Cl. 221—278 8 Claims

A magazine-type fastener supply device attached to a power-driven tool and adapted to feed fasteners into a fastening position with the supply device held in any position. The supply device includes a conduit which a column of side-by-side fasteners are moved along by the action of a stream of air flowing through the conduit. The conduit terminates at its downstream end at a fastener retaining station, one side of which is bounded by a split diaphragm which releasably holds a fastener in the retaining station. A plunger adjacent the

retaining station and opposite the diaphragm is operable on actuation to thrust a fastener in the retaining station endwise through the diaphragm and into a fastening position. The plunger is rotatable and is driven by the tool.



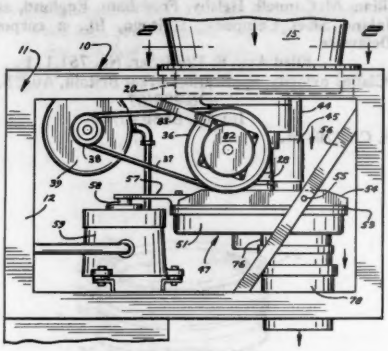
3,561,642
ANTITAMPER DEVICE FOR LIQUID DISPENSERS
Peter P. Bazarnic, P.O. Box 24, Willoughby, Ohio 44094
Filed Oct. 14, 1968, Ser. No. 767,439
Int. Cl. B67d *5/32; G01f 11/32*
U.S. Cl. 222—36 **8 Claims**



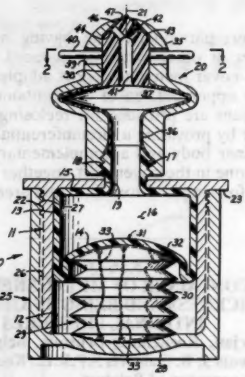
An antitamper device for mounting in a dispenser which measures, records, and pours liquor by the drink to prevent the entrance of a wire or toothpick into the valve region of the dispenser. This prevents the valve from being pried open or propped open to prevent unwanted, and uncounted dispensing of liquor from the bottle on which the dispenser is mounted.

3,561,643
FEEDER FOR PARTICULATE MATERIAL, HAVING MEANS RESPONSIVE TO THE RATE OF FLOW
Gerald P. Kloven, White Bear Lake, Minn., assignor to Ramsey Engineering Company, St. Paul, Minn.
Filed Sept. 16, 1968, Ser. No. 759,853
Int. Cl. B67d *5/08*
U.S. Cl. 222—55 **15 Claims**

A gravity-type feeder apparatus for feeding particulate material from a storage bin including a first member having agitator and valve means rotating about an upright axis to provide a valving action for discharging material from the bin, and a second member for receiving the material as it discharges from the first member and including means to weigh the material. Means to provide a signal corresponding to the speed of movement of the feeding apparatus are included so that by combining the weight signal and the speed signal a signal indicating the rate of discharge of material from the bin is received. The rate signal can be used for determining whether a correct amount of material is being fed, and control means are provided for making proper adjustments to the rate of feed.



3,561,644
PRODUCT DISPENSER AND VALVE THEREFOR
Everett L. Works, Lafayette, Calif., and Gloria May Works, administratrix of said Everett L. Works, deceased
Continuation-in-part of application Ser. No. 574,435, Aug. 23, 1966, now abandoned. This application Oct. 17, 1967, Ser. No. 683,066
Int. Cl. B65d *35/28*
U.S. Cl. 222—95 **2 Claims**

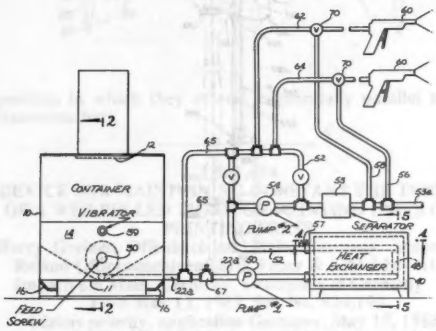


This disclosure relates to pressurized product dispensers in which a product is dispensed under pressure supplied by a fluid pressure source, but which source is kept separate from the product itself. In the preferred embodiment, a flexible product container is placed in a rigid retainer and in contact with an expansible pressure source, the pressure from the source exerting a mechanical and compressive force on the product container. A valved orifice controls expulsion of the product from its container.

3,561,645
VISCOUS MATERIAL SPRAYING DEVICE
Roger H. Hopkins, Pasadena, Calif., assignor to Roger Hopkins Company, Pasadena, Calif., a corporation of California
Filed Apr. 12, 1968, Ser. No. 720,931
Int. Cl. B67d *5/62*
U.S. Cl. 222—146 **10 Claims**

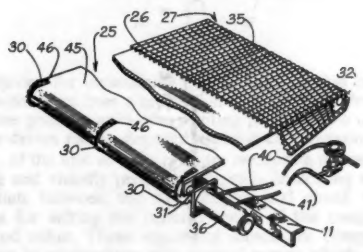
An apparatus and method for spraying coal tar and other thixotropic viscous materials comprising a first vibrating con-

tainer having therein a feed screw and having pumping means for removing materials from the first container to an adjacent heating container for heating the viscous materials. A second high-pressure pumping means are connected to the heating container to remove the lower viscosity material



therefrom which is then pumped through conduit means for spraying. A heating conduit circuit is arranged so that when not in use a limited amount of viscous material may be heated and prepared for spraying without having to heat the entire bulk of raw material.

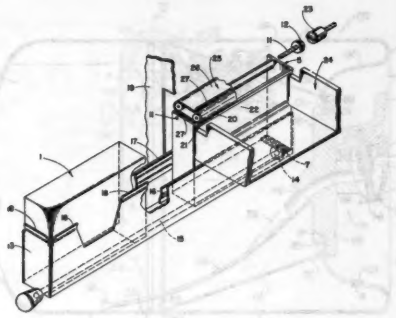
3,561,646
MOVABLE BED FOR GRAVITY BED VEHICLES
James L. Meharry, R.R. 1, Wingate, Ind. 47994
Filed Oct. 21, 1968, Ser. No. 769,167
Int. Cl. A01c *15/18*
U.S. Cl. 222—176 **2 Claims**



A gravity bed vehicle having front and rear sloping bed surfaces which lead into an endless chain conveyor arranged to discharge from either transverse side of the vehicle.

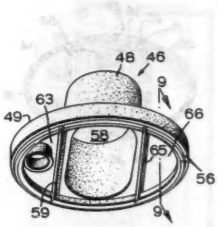
3,561,647
APPARATUS FOR HANDLING ELECTROGRAPHIC TONER PACKAGES
Conrad Altmann, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y., a corporation of New Jersey
Filed May 1, 1968, Ser. No. 725,785
Int. Cl. B67d *5/06*
U.S. Cl. 222—179.5 **6 Claims**

A toner container and dispenser, usable with electrographic apparatus, has an outer cover from which an inner container is mechanically slid to a dispensing position. The inner container has an inside lining restricting the volume of toner in the container and a shaft for taking up the lining thereby making the toner available for dispensing. A rupturable seal is also linked to the shaft to enable opening of the



container as the shaft is turned. After the container is empty, it is slid back into the still-clean cover for removal.

3,561,648
RESILIENT INTEGRAL BODIES INCORPORATING POPPET-VALVES
Frederick Harold Humphrey, 7 Orchard St., Markham, Ontario, Canada
Filed Apr. 9, 1969, Ser. No. 814,571
Int. Cl. B65d *37/00*
U.S. Cl. 222—207 **12 Claims**

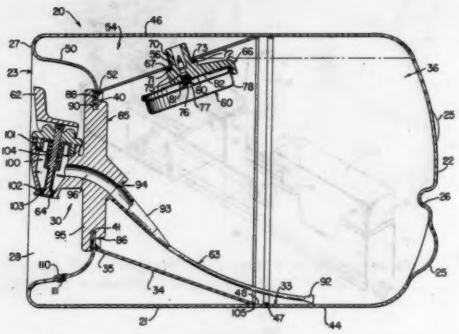


The combination of a supporting surface having two ports, and an integral body which includes a recess-defining resilient portion secured against the surface to define therewith a chamber into which the two ports open. A poppet-valve integral with the body extends toward the surface and closes one port with mechanical interference, thereby to establish one pressure threshold above which fluid flows from one port to the other port, and a second pressure threshold above which fluid flows in the opposite direction.

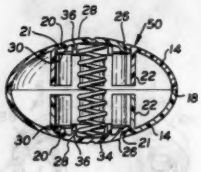
3,561,649
DISPENSING CONTAINER
Calvin L. Wilson, Chesterfield County, Va., assignor to Reynolds Metals Company, Richmond, Va., a corporation of Delaware
Filed June 10, 1968, Ser. No. 735,657
Int. Cl. B65d *83/14*
U.S. Cl. 222—399 **12 Claims**

This disclosure relates to an inexpensive and easily cleaned

reusable dispensing container for storing and dispensing a liquid contained therein under gaseous pressure.



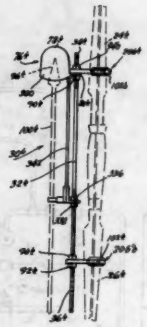
3,561,650
SOAP DISPENSING CONTAINER
Derek A. Brand, 12 Village Drive W., Deer Park, N.Y. 11729
Filed May 21, 1969, Ser. No. 826,360
Int. Cl. B67d *3/50*
U.S. Cl. 222—518 **12 Claims**



A liquid soap-dispensing container including a self-sealing pressure responsive valve arrangement protruding above the surface of the container. Exterior pressure on the valve will permit controlled flow of liquid soap from the container, while release of pressure on the valve will seal the container.

3,561,651
QUIVER ATTACHMENT FOR AN ARCHER'S BOW
James C. Ramsey, c/o Shop of the Red Eagle, P.O. Box 36, Lincoln, N. Mex. 88338
Original application Aug. 17, 1967, Ser. No. 661,302, now Patent No. 3,490,662, dated Jan. 20, 1970. Divided and this application Aug. 13, 1969, Ser. No. 862,135
Int. Cl. F41b *5/06*
U.S. Cl. 224—1 **6 Claims**

Apparatus comprising a substantially open frame including a pair of longitudinally spaced substantially parallel arrow-mounting plates, the plates releasably receiving the arrow shafts adjacent their fletched and headed ends, respectively, and including cap guard means associated with the last referred to plate to prevent inadvertent or accidental injury to the archer and/or damage to the arrow heads. The frame means of the apparatus also includes means for releasably securing the same on a bow for extension longitudinally thereof, and the mounting means are so constructed as to permit the apparatus to be used with equal facility by right or left-handed bowmen.



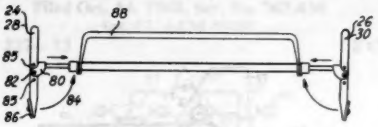
3,561,652
FLOATING FISH STRINGER
Lewis L. Ruter, 218 26th Ave. N., Apt. 7, Minneapolis, Minn.
Filed Dec. 19, 1968, Ser. No. 785,257
Int. Cl. A01k *65/00*
U.S. Cl. 224—7 **8 Claims**

A fish stringer comprising an elongated chain carrying a plurality of flotation units and spaced safety pin hooks. A lockring carrying a tag is attached to the upper links of the chain to hold the flotation units in assembled relation with the chain.

3,561,653
BAGGAGE RACK FOR AUTOMOBILE TOPS
Henning Emanuel Eriksson, 10 Furumostigen, and Folke Assar Eriksson, 1 D Fagelsangsvagen, Kalix, Sweden
Filed Nov. 18, 1968, Ser. No. 776,612
Int. Cl. B60r *9/04*
U.S. Cl. 224—42.1 **3 Claims**

A baggage carrier for an automobile top has two elongated bars interconnected by transverse bars and consisting of pivotally interconnected sections, so that the baggage carrier can be folded to form a stack the height of which is substantially three times that of the individual bars. The bars are

connected with supports used to fix the baggage carrier upon the top of an automobile. The supports can be swung into a



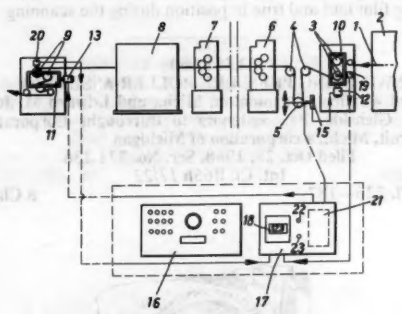
position in which they extend substantially parallel to the transverse bars.

3,561,654

DEVICE FOR MAINTAINING CONSTANT THE TENSION OF A WEB PULLED THROUGH PRINTING UNITS OF A PRINTING PRESS

Harry Greiner, Offenbach am Main, Germany, assignor to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Offenbach am Main, Germany, a company of Germany

Filed May 13, 1969, Ser. No. 824,191
Claims priority, application Germany, May 18, 1968, P 17 61 432.3
Int. Cl. B65h *25/22*
U.S. Cl. 226—25 **5 Claims**



A device for maintaining constant the tension of a paper web withdrawn from a supply roll and conveyed through one or more printing units of a printing press by two couples of power-driven rollers disposed anterior and posterior, respectively, of the unit or units includes measuring means for measuring and visually preferably digitally indicating speed differentials between the two couples and speed regulating means for setting the relative speed of the couples for a selected value. These regulating means are complemented and act in conjunction with control means which automatically maintain the tension of the web portion between the anterior couple and the next adjacent printing unit at a selected constant value.

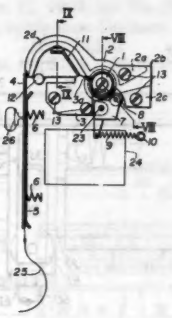
3,561,655

MOVIE FILM FEED CONTROL DEVICE

Yukio Yasukawa, Kogandori, and Yasuyuki Nakahara, Suwashi, Japan, assignors to Sankyo Kogaku Kabushiki-Kaisha, Suwa-shi, Japan

Filed May 15, 1969, Ser. No. 824,826
Claims priority, application Japan, May 18, 1968, June 18, 1968, 43/33255;43/41778
Int. Cl. B65h *23/16*
U.S. Cl. 226—35 **10 Claims**

A movie film feed control device comprising a friction wheel positioned between a light transmitting window for projection or picture taking and a film supply reel, means for yieldably pressing against the inner side of a loop of film formed between said friction wheel and said light transmitting window, and a contact member positioned between said yieldable pressing means and said friction wheel and adapted to be contacted by the film. The device permits to correct the shape of the loop of film and feed the film accu-



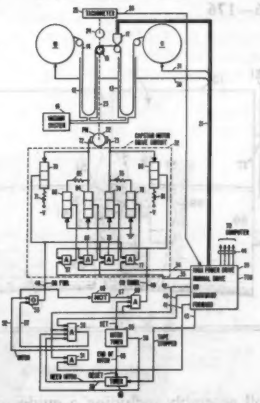
rately at all times by varying the force with which the film presses against the friction wheel by the interaction of said yieldable pressing means and said contact member.

3,561,656

SINGLE CAPSTAN MAGNETIC TAPE DRIVE SYSTEM WITHOUT TAPE STICK

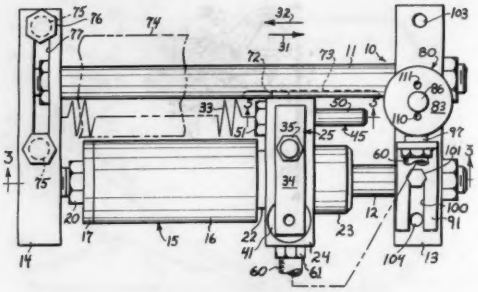
Friedrich R. Hertrich, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y., a corporation of New York

Filed Apr. 9, 1969, Ser. No. 814,689
Int. Cl. B65h *77/00*
U.S. Cl. 226—49 **4 Claims**



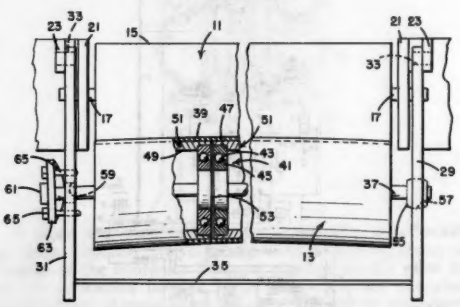
A single capstan magnetic tape system having a processing station disposed intermediate a single drive capstan, and one of two vacuum columns exhibiting high opposing drag when the capstan attempts to drive the tape through the processing station toward the one vacuum column. The possibility of tape stick caused by this high drag is prevented by the tape control unit sensing that the tape has been stopped a predetermined time; then a "forward hitch" is instituted wherein the tape is first transported in opposite direction from the area of high drag for a predetermined time or distance; and then, the tape movement is immediately reversed moving the tape through the processing station toward the one vacuum column.

3,561,657
STOCK FEEDER
Albert W. Scribner, 6 Country Club Road, Darien, Conn.
Filed Sept. 20, 1968, Ser. No. 761,253
Int. Cl. B65h *17/36*
U.S. Cl. 226—150 **35 Claims**



A simplified low-cost air-operated stock feeder for punch presses, and having a separate three-way valve unit which is detachable from the rest of the feeder and which is adapted to apply to stock being fed a clamping force corresponding to the force required to operate the valve unit. Fluid pressure is conducted to and from the feeder air motors through a simple flexible tube that is connected between the reciprocating feed slide and the output port of said valve unit. A tubular main air motor is coaxially mounted on one of two slide rods forming part of the feeder frame.

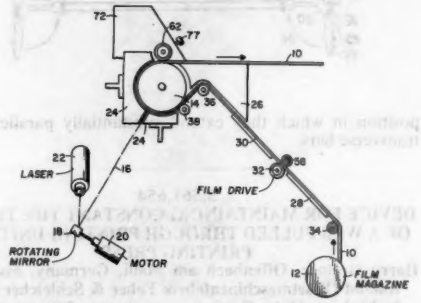
3,561,658
NIP ROLL ASSEMBLY
Henry J. McDermott, Collingdale, Pa., assignor to FMC Corporation, Philadelphia, Pa., a corporation of Delaware
Filed Sept. 27, 1968, Ser. No. 763,313
Int. Cl. B65h *17/20*
U.S. Cl. 226—176 **3 Claims**



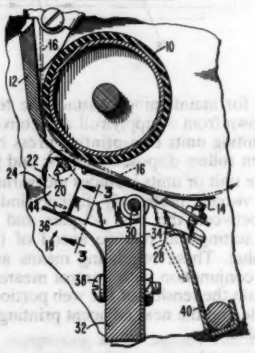
A nip roll assembly including a guide roll and a longitudinally arcuate pressure roll which together provide a nip into and through which a web is adapted to travel, with the curvature of the arcuate pressure roll being adjustable to vary the degree of nipping provided by such rolls at selected locations longitudinally thereof.

3,561,659
TRANSPORT SYSTEM
Jack R. Anthony, Borger, Tex., assignor to Dresser Industries, Inc., Dallas, Tex., a corporation of Delaware
Filed June 19, 1968, Ser. No. 738,258
Int. Cl. B65h *17/08*
U.S. Cl. 226—180 **1 Claim**

This disclosure is of a high speed data plotter system. The data plotter system uses modulated laser light to scan photographic film. The system includes means for driving the photographic film, and at least two separate guide rollers which frictionally engage the moving photographic film. The system also includes a rotatable drum and pressure rollers adapted to frictionally engage the photographic film with the rotatable drum so that all slippage is eliminated therebetween throughout any series of rapid incremental motions of the drum. The guide rollers and pressure rollers maintain the fast moving film taut and true in position during the scanning.

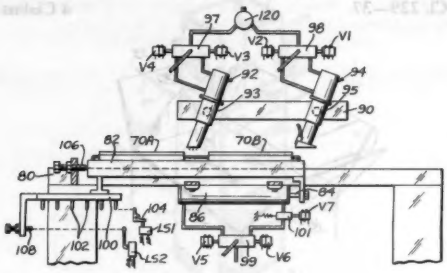


3,561,660
SWIVELING PRESSURE ROLLER ASSEMBLY
Edward A. Nicol, Farmington, Mich., and Edward M. Johnson, Glenside, Pa., assignors to Burroughs Corporation, Detroit, Mich., a corporation of Michigan
Filed Oct. 28, 1968, Ser. No. 771,236
Int. Cl. B65h *17/22*
U.S. Cl. 226—187 **8 Claims**



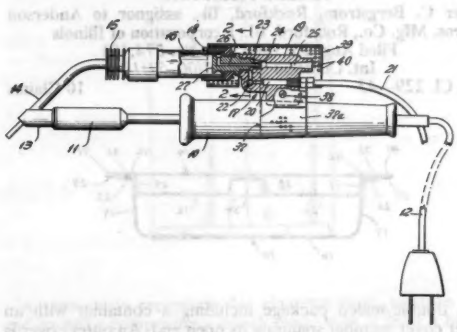
A pressure roller assembly, such as incorporated in a business machine, which permits the parts to be snap-fitted together and to rotate or swivel with respect to one another. The assembly includes a pressure roller which snap-fits onto one end of a yoke and the yoke in turn snap-fits into a pressure rocker arm. The rocker arm is shaped to snap-fit onto a support rod so that the assembly can pivot about the rod as an axis to open and closed position with respect to a rotatable platen. The snap-fitted pivotal connections between the parts are accomplished by forming the parts of molded hardened plastic material having the inherent properties of lubricity and slight elasticity.

3,561,661
PIN DRIVING TOOL
Carl E. Boettcher, Evansville, Ind., assignor to Kimball Piano & Organ Co., Jasper, Ind., a corporation of Delaware
Filed Oct. 14, 1968, Ser. No. 767,436
Int. Cl. A43d 69/00
U.S. Cl. 227—73 8 Claims



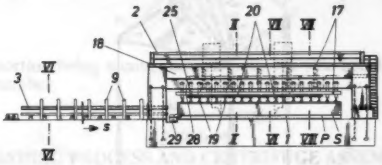
The invention concerns a device for driving headless pins and includes a shuttling pin carrier that moves the pins laterally from a feed path to a driving path where a drive plunger drives the pins endwise into a preformed hole. The device is arranged to drive one pin or multiple pins and is adapted for incorporating in a machine having a drilling arrangement for drilling the holes to receive the pins.

3,561,662
SOLDER-REMOVING DEVICE
Raymond A. Duhaime, Huntington, and Clifford S. Lasto, Orange, Conn., assignors to Air-Vac Engineering Company, Incorporated, Milford, Conn., a corporation of Connecticut
Filed Jan. 8, 1969, Ser. No. 789,697
Int. Cl. B23k 1/00, 5/22
U.S. Cl. 228—20 6 Claims



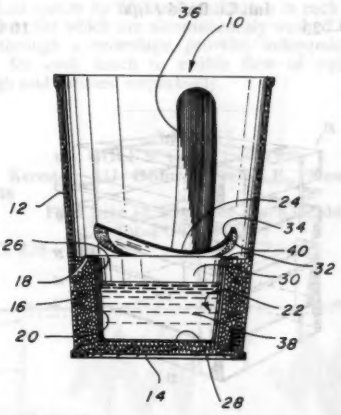
A solder-removing device has a handle and a heated solder-removing tip thereon provided with a tube connected to a receptacle for the melted solder. A transducer means is mounted on the handle of the device adjacent the solder-receiving receptacle and connected thereto. The transducer means produces a suction in response to the flow therethrough of air under pressure, and has a manually operated valve thereon for controlling the flow of said air under pressure. A perforated protective shield covers the transducer means to prevent contact with the transducer means and to permit the transducer means to be cooled. The shield forms a part of the mounting for the transducer means and also a supplemental handle or gripping surface for the device.

3,561,663
APPARATUS FOR PRODUCING SHEET METAL PLATES HAVING REINFORCING MEMBERS WELDED THEREON
Heinz Martin Wenzlaff, 2863 Ritterhude, Am Groben Geeren 7–9 Germany
Filed Jan. 22, 1968, Ser. No. 699,483
Claims priority, application Germany, Feb. 4, 1967, P1,298,852
Int. Cl. B23k 1/00, 5/00
U.S. Cl. 228—25 18 Claims



This disclosure relates to an apparatus for producing sheet metal plates having reinforcing members welded thereon, particularly ribbed ship's plates, of the kind comprising a feed device for the sheet metal plates, a device for mounting said reinforcing members on to the plates and means for welding said reinforcing member to said sheets.

3,561,664
CONTAINER AND INSERT THEREFOR
Charles E. Palmer, Turnpike Road, Somers, Conn. 06071
Filed Mar. 17, 1969, Ser. No. 807,531
Int. Cl. B65d 25/08, 5/56, 77/08
U.S. Cl. 229—15 9 Claims

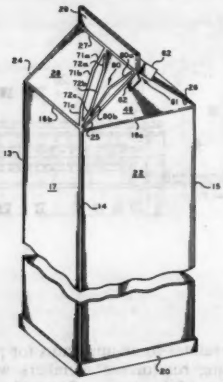


A container assembly comprises a container having an end wall and a sidewall with an inwardly extending portion adjacent the end wall providing an inwardly extending shelf and defining an inner recess. An insert seated in the recess includes a body with a material-receiving cavity and a flange extending outwardly therefrom which is of lesser lateral dimension than the shelf and is sealed thereupon.

3,561,665
GABLE TOP CONTAINERS

Ernest L. Smith, Kansas City, Mo., assignor to Phillips Petroleum Company, a corporation of Delaware

Filed June 11, 1969, Ser. No. 832,258
Int. Cl. B65d 5/02, 5/72, 17/00
U.S. Cl. 229—17 5 Claims

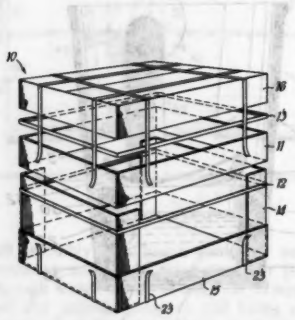


Snap-action score lines in each roof panel and downwardly extending reckoned lines of severance improve the opening characteristics of gable top containers.

3,561,666
CONTAINER

Anthony M. Spinks, and Michael H. Lethbridge, London, England, assignors to Tri-Wall Containers, Inc., Plainview, N.Y., a corporation of New York

Filed May 5, 1969, Ser. No. 821,881
Int. Cl. B65d 13/00
U.S. Cl. 229—23 10 Claims



A container of boxlike construction which comprises at least two tubular sections and a rigid frame interposed between the or each pair of the adjacent sections each frame comprising a flange which is interposed between the adjacent faces of the sections to form a butt joint therebetween and upwardly and downwardly projecting walls located externally of the container to retain the edges of the sections against outward expansion.

3,561,667
COMPOSITE CONTAINER

Elias A. Saltman, Grand Rapids, Mich., assignor to Packaging Corporation of America, Evanston, Ill., a corporation of Delaware

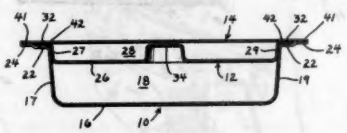
Filed Dec. 12, 1968, Ser. No. 783,279
Int. Cl. B65d 5/56
U.S. Cl. 229—37 4 Claims

A composite container is provided for use in the bulk handling of comminuted materials and the like. The container includes a foldable outer carton having sidewall panels and full overlapping end closure flaps which cooperate to define a product-accommodating compartment, and a pliable bag disposed within the compartment and having an open upper end for product loading. The wall portions of the bag are affixed to the interior surfaces of the carton sidewall panels and the portions of the bag circumjacent the open upper end are releasably affixed to the closure flaps defining the carton upper end. The bag portion of the first folded closure flap projects beyond the distal edge of the flap so that the projecting bag portion overlies a portion of the bag attached to a second closure flap, opposed to said first folded closure flap, and thus, retains the projected bag portion in linear contact with the overlapped bag portion of the second closure flap at the fold line connection between the second closure flap and a sidewall of the container.

3,561,668
SEALED PACKAGE

Roger C. Bergstrom, Rockford, Ill., assignor to Anderson Bros. Mfg. Co., Rockford, Ill., a corporation of Illinois

Filed Aug. 23, 1966, Ser. No. 574,451
Int. Cl. B65d 5/64, 43/00, 51/19
U.S. Cl. 229—43 10 Claims



A double-sealed package including a container with an inner cover member spanning its open end. An outer cover is sealed to both the container flange and the inner cover member. The method includes pressure forming the container and inner cover member, depositing a material in a container, placing the inner cover member in position, and sealing the outer cover to both the container and inner cover member.

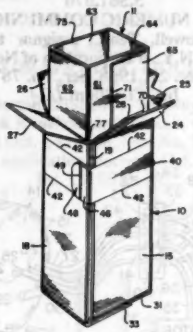
3,561,669
COMPOSITE LEAKPROOF CARTON

Norval W. Postweiler, Maplewood, N.J., and George Vrana, Flushing, N.Y., assignors to Riegel Paper Corporation, New York, N.Y., a corporation of Delaware

Filed Sept. 30, 1968, Ser. No. 763,788
Int. Cl. B65d 5/54, 5/70
U.S. Cl. 229—51 1 Claim

The disclosure relates to a composite leakproof carton construction having a parallelepiped outer shell, a full length

tubular liner tightly fitted within the outer shell, and sealing membranes adhered to outfolded carton end flaps of the shell and gasketed between the liner end edges and said flaps



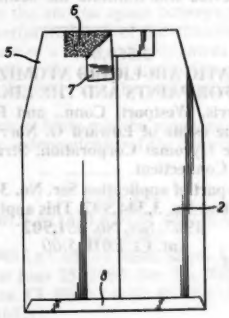
when the flaps are infolded. The carton is easily openable by a shell encircling tear strip, the removal of which forms a telescopically reclosable cover or cap member.

3,561,670

ASHTRAYS AND LIKE SMOKER'S RECEPTACLES

Marcus Segal, Kirkella, near Hull, England (14 Allenhall Way, Kirkella, Hull, East Yorkshire)

Filed Feb. 25, 1969, Ser. No. 802,052
Claims priority, application Great Britain, Apr. 30, 1968, 20338/68
Int. Cl. B65d *31/04*
U.S. Cl. 229—53 1 Claim



A throwaway receptacle for cigarette ends, tobacco ash and suchlike comprising a pouch made with at least a lining of noncombustible material and formed with an extension on the back of which is a band of adhesive normally covered with a strip of readily removable material which is removed to adhere the pouch to a support in opened out condition with its mouth uppermost.

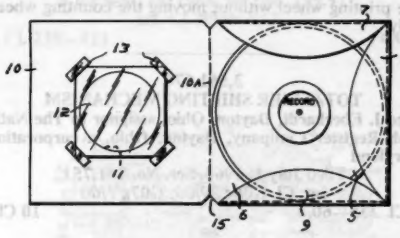
3,561,671

ENCLOSURE FOR RECORDS

Wayland M. Minot, Jr., deceased, late of Cambridge, Mass., by Elizabeth C. Minot, Administratrix, 94 Foster St., Cambridge, Mass. 02138

Filed Jan. 9, 1969, Ser. No. 790,898
Int. Cl. B65d *27/04, 85/30*
U.S. Cl. 229—71 2 Claims

A record enclosure is disclosed that includes a wrapper on which a record may be placed while held by its margins and marginal portions foldable over the member to prevent the escape of the record or finger contact with its grooves while the enclosure is being inserted in or removed from a jacket,



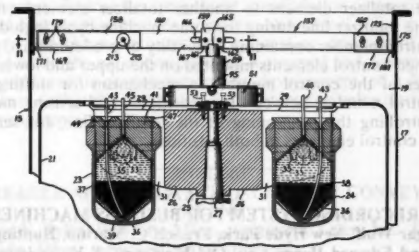
one portion being a cover substantially the size and shape of the member.

3,561,672

WASHING PROCESS AND CENTRIFUGE ASSEMBLY

Charles A. Schlutz, Glenview; Stanley J. Sedivy, Chicago Ridge, and Charles R. Memhardt, Morton Grove, Ill., assignors to Baxter Laboratories, Inc., Morton Grove, Ill., a corporation of Delaware

Filed Mar. 18, 1968, Ser. No. 713,595
Int. Cl. B04b *5/02*
U.S. Cl. 233—17 22 Claims



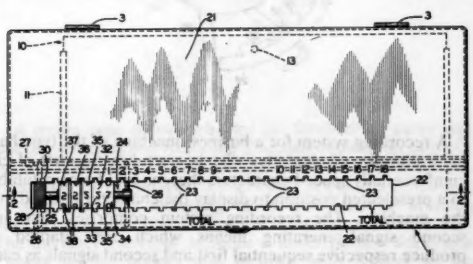
A fluid system for separating materials in each of a plurality of batches which are simultaneously washed by forcing a fluid through a centrifuge, provides independent pressure heads for each batch to enable flow of equal volumes through said batches, respectively.

3,561,673

GOLF SCORE COUNTER

Andy Kerestes, 611 Delford Ave. N.E., Massillon, Ohio 44646

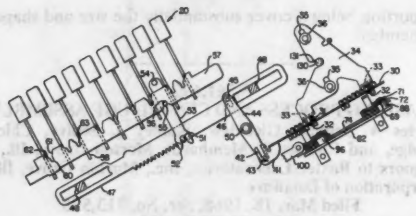
Filed June 11, 1969, Ser. No. 832,204
Int. Cl. G06c *29/00*
U.S. Cl. 235—58 9 Claims



A portable device for recording golf scores having a rotatable-printing wheel for printing the number of strokes for each hole upon a card. A counting wheel assembly having printing

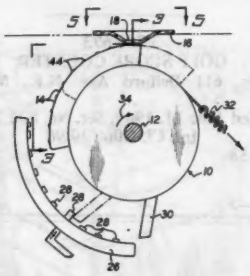
type thereon is actuated by the rotatable-printing wheel for recording the total of nine holes and of eighteen holes. A rotatable connection between the rotatable-printing wheel and the counting wheel assembly permits backward rotation of the printing wheel without moving the counting wheel assembly.

3,561,674
TOTALIZER SHIFTING MECHANISM
George J. Eberhardt, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio, a corporation of Maryland
Filed July 1, 1968, Ser. No. 741,751
Int. Cl. G06c *29/00*; G07g *1/00*
U.S. Cl. 235—60.3 **10 Claims**



A totalizer shifting mechanism for transferring a total from one totalizer element to another totalizer element on the same totalizer line during the same machine cycle including a control member containing a plurality of predetermined positioned control elements mounted on the upper and lower surfaces of the control member, a mechanism for shifting the control member between two positions, and sensing means, controlling the positioning of the totalizer line, for sensing the control elements in both positions.

3,561,675
RECORDING SYSTEM FOR BUSINESS MACHINES
Edgar Wolf, New Hyde Park; Francis C. Marino, Huntington, and Edward Henry Lau, Old Westbury, N.Y., assignors to Digitronics Corporation, Albertson, N.Y., a corporation of Delaware
Filed July 23, 1969, Ser. No. 844,028
Int. Cl. G06c *17/00, 29/00*
U.S. Cl. 235—61 **12 Claims**

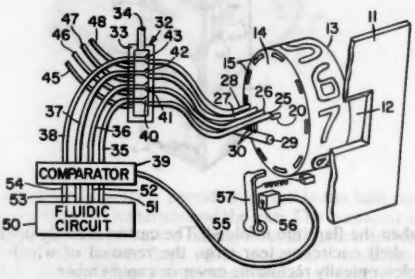


A recording system for a business machine of the type having a plurality of character wheels, each having a set of circumferentially spaced characters thereon and being rotatable to a preselected position to display the character entered into the machine. The recording system comprises first and second signal-generating means which are adapted to produce respective sequential first and second signals as each character passes a preselected point during a rotation of a character wheel. Signal means is provided which is responsive to the sequential occurrence of said first and second signals for producing an output signal which is indicative of the character entered into the machine.

ERRATA

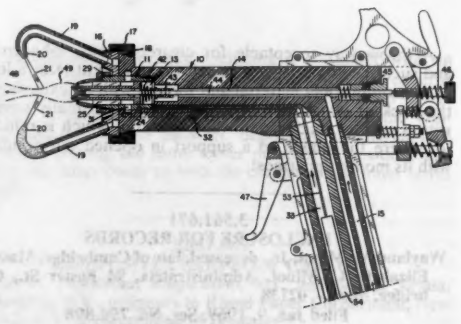
For Classes 235—201 and 235—201 see:
Patent Nos. 3,562,506 and 3,562,507

3,561,676
FLUIDIC NUMERIC COMMUNICATOR
Lynn G. Amos, Powell, Tenn., assignor to Corning Glass Works, Corning, N.Y., a corporation of New York
Filed Dec. 27, 1968, Ser. No. 787,517
Int. Cl. G06m *1/24*
U.S. Cl. 235—201 **9 Claims**



A fluidic numeric display device which receives a digitally coded output from a fluidic circuit such as a counter and displays its numerical equivalent. A rotatable numbered cylinder is coded by means of a plurality of slots to provide a coded fluidic output which is indicative of the numeral appearing in an indexing window adjacent the cylinder. The initially rotating cylinder is stopped when the coded output therefrom is identical with the coded signal. Furthermore, a desired number can be indicated to a fluidic circuit by manually rotating the numbered cylinder to the desired number. The device will translate the setting into a fluidic code.

3,561,677
ELECTROSTATIC AIR-LIQUID ATOMIZING NOZZLE FOR PAINTS AND THE LIKE
Edward O. Norris, Westport, Conn., and Hereward Wake, Executor of the estate of Edward O. Norris, deceased, assignors to The Gyromat Corporation, Stratford, Conn., a corporation of Connecticut
Continuation-in-part of application Ser. No. 340,466, Jan. 27, 1964, now Patent No. 3,344,992. This application July 7, 1967, Ser. No. 651,902
Int. Cl. E01b *5/00*
U.S. Cl. 239—15 **8 Claims**



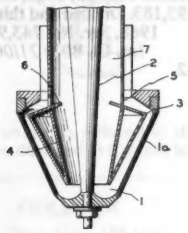
The invention is directed to air-liquid atomizing nozzles, particularly for electrostatic paint spray systems. The nozzle of the invention is characterized by having an annular liquid discharge opening closely surrounded by an annular air

discharge opening. The arrangement of the air discharge opening is such that the air, while being discharged in a generally cylindrical flow, is caused and permitted immediately to contract in diameter in front of the nozzle, and thereafter to gradually expand in diameter to form a desired paint spray pattern.

3,561,678
CENTRIFUGE FOR SPRAYING LIQUID MATERIAL TO BE PRILLED

Isak Andreas Friestad, Flattenlia, Norway, assignor to Norsk Hydro-Elektrisk Kvaelstofaktieselskab, Oslo, Norway

Filed Oct. 14, 1968, Ser. No. 767,415
Claims priority, application Norway, Oct. 25, 1967, 170,270
Int. Cl. B05b *3/02*
U.S. Cl. 239—222 **8 Claims**



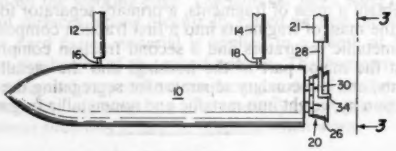
Centrifuge for use in spraying liquid material intended to be converted into so-called prills. The centrifuge comprises a centrifuge container having a perforated wall, a displacement body arranged in said container and means for rotating the container. Liquid material to be sprayed is supplied through a pipe, either to the annular space between the displacement body and the perforated wall of the centrifuge container, or to the inner space of a hollow displacement body having orifices through which the liquid material can flow out in the space between the body and the perforated wall of the centrifuge container.

The displacement body may be mounted axially moveable and/or rotatable independently of the centrifuge container.

3,561,679
COLLAPSIBLE NOZZLE FOR AIRCRAFT ROCKET MOTORS

Sam E. Lager, 385 La Cumbre Road, Somis, Calif. 93066

Filed June 25, 1968, Ser. No. 740,836
Int. Cl. B63h *11/00*; **B64d** *33/04*
U.S. Cl. 239—265.11 **4 Claims**

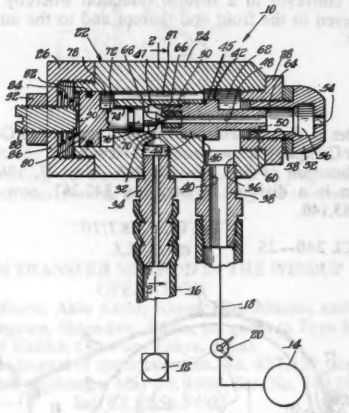


A nozzle for rocket motors formed of collapsible telescoping tubes which are extended upon launch to a predetermined nozzle length whereby the advantage of reduced space during shipping and stowage may be combined with the advantage of extended nozzle length during operation.

3,561,680
SPRAY HEAD ASSEMBLY

Richard J. Ott, Baroda, Mich., assignor to Respond Inc., Baroda, Mich., a corporation of Michigan

Filed Sept. 16, 1968, Ser. No. 759,917
Int. Cl. B05b *7/12*
U.S. Cl. 239—411 **6 Claims**

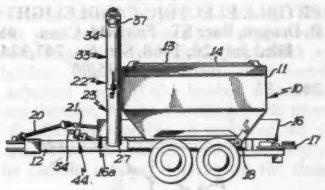


There is disclosed a spray head assembly for dispensing a liquid spray with air under pressure. An internal valve in the spray head closes for positively preventing dripping of the liquid when the air under pressure is stopped and a piston is provided and is responsive to the development of a back pressure within the spray head for opening the valve during a spraying operation.

3,561,681
SPREADER APPARATUS WITH AUXILIARY CONVEYOR MEANS

Loren E. Tyler, Wayzata, Minn., assignor to Letco, Inc., Long Lake, Minn., a corporation of Minnesota

Filed May 16, 1969, Ser. No. 825,237
Int. Cl. A01c *15/12*; **B60p** *1/38*, *1/40*
U.S. Cl. 239—663 **10 Claims**



A trailer type spreader-hauler for fertilizer or other particulate material and including a hopper or tank for containing the material, a chain conveyor for moving material longitudinally of the hopper, a distributor apparatus at the rear of the hopper for spreading the material, and an auxiliary auger conveyor mounted adjacent the front end of the unit. The auxiliary conveyor includes a lower portion fixed with respect to the hopper and inclined with respect to the horizontal and a movable portion which in one position is in continuous alignment with the fixed portion but is pivotable through a vertical arc to a retracted or rest position wherein it extends back across the front of the hopper so that it does

not interfere with normal use of this apparatus as a spreader. Normal drive means for the apparatus when used as a spreader includes a power takeoff driven drive means for operating the distributor apparatus and a ground driven drive means for driving the longitudinal conveyor whereby it conveys material to the rear of the hopper. An auxiliary drive means including power takeoff driven drive means is operable to drive the auxiliary conveyor and to drive the longitudinal conveyor in a reverse direction whereby material is conveyed to the front end thereof and to the auxiliary conveyor.

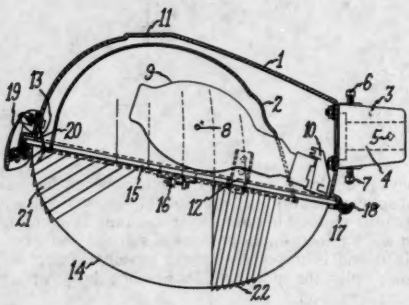
3,561,682
LUMINAIRE

Charles H. Rex, Marblehead, Mass., assignor to General Electric Company, a corporation of New York

Continuation of Ser. No. 626,906, May 27, 1966, which in turn is a division of Ser. No. 542,267, now Patent No. 3,283,140.

Int. Cl. F21s *1/10*

U.S. Cl. 240—25 **5 Claims**



Luminaire for street lighting comprises an inverted bowl-shaped casing having a flat leveling pad formed on its top surface and having a slipfitter socket at its rear end arranged with its axis parallel to the plane of the leveling pad. The rim of the casing is at an acute angle to the leveling pad. Leveling screws on the slipfitter enable the luminaire casing to be tilted at the correct angle by adjusting the screws with reference to a spirit level placed on the leveling pad.

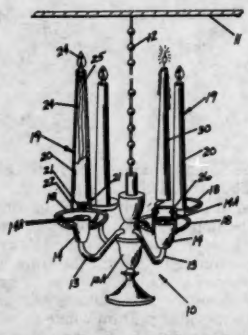
3,561,683
CONVERTIBLE ELECTRIC CANDLELIGHT FIXTURE

William B. Dragan, Burr ST., Fairfield, Conn. 06430

Filed July 26, 1968, Ser. No. 747,924

Int. Cl. F21v *35/00*

U.S. Cl. 240—53 **7 Claims**



The disclosure is directed to a readily convertible electric candlelight fixture. The light fixture comprises a base or fixture having connected thereto a female socket formed with at least a pair of spaced contact openings and electric light having complementary projecting electrical contact prongs adapted to be detachably received in the contact openings of the female socket. An adapter is provided to circumscribe the socket when the electric light is removed therefrom to provide a holder for receiving a candle and a protective cover for the contact openings to prohibit any candle drippings from entering the contact openings when candles are employed instead of the electric light.

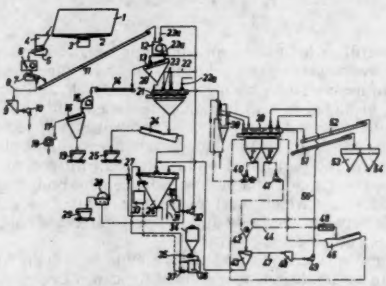
3,561,684
APPARATUS FOR SEGREGATING THE COMPONENTS OF ELECTRIC CELLS

Reinhard Fischer; Ludolf Frank, and Guenter Ebeling, Stolberg, Germany, assignors to Stolberger Zink Aktiengesellschaft fur Bergbau und Huttenbetrieb, a corporation of Germany

Original application May 25, 1966, Ser. No. 552,843, now Patent No. 3,493,183. Divided and this application July 10, 1968, Ser. No. 743,905

Int. Cl. B02c *21/00*

U.S. Cl. 241—42 **16 Claims**



Components of electric cells of the type having a nonmetallic housing, nonmetallic separators and metallic active material and grid plates are separated by means of an apparatus comprising a fragmentizer for fragmentizing the cells to obtain a mass of fragments, a primary separator for dividing the mass of fragments into a first fraction comprising the nonmetallic separators and a second fraction comprising at least the major part of the housings and the metallic fragments, and a secondary separator for segregating the second fraction by weight into metallic and nonmetallic fragment.

3,561,685
CENTER FED MILL WITH ARCUATE DISCHARGE SCREENS

Friedhelm R. Feder, North Plainfield, N.J., assignor to Wedco, Inc., Garwood, N.J., a corporation of New Jersey

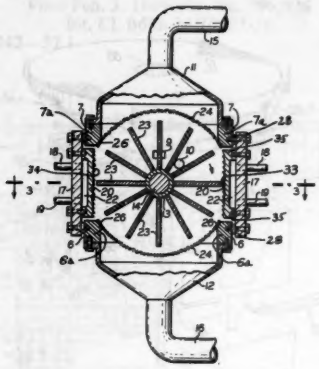
Filed Jan. 31, 1968, Ser. No. 702,027

Int. Cl. B02c *13/13, 18/44*

U.S. Cl. 241—55 **7 Claims**

Material, particularly thermoplastic material, for example polyethylene, is subjected to size reduction in a mill in which

it is projected by an impeller against one or more cutter plates closely spaced from the impeller. The working of the

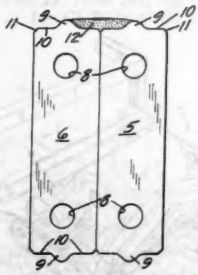


material is continued until it is reduced to the extent that it passes through a screen disposed in the mill housing.

ERRATUM

For Class 241—186 see:
Patent No. 3,561,072

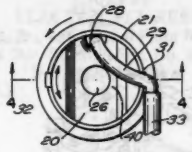
3,561,686
HAMMERMILL HAMMERS
Glenn D. Hedrick, 905 Orchard Ave., St. Paul, Minn. 55103
Filed June 25, 1968, Ser. No. 739,719
Int. Cl. B02c *13/28*
U.S. Cl. 241—197 **5 Claims**



A hammermill hammer design to increase the life of the hammer due to the placement of more of the hard facing material on the working edge. The hammer has a steel body with end surfaces having a centrally raised portion on which surfaces hard facing material is applied to a depth at least equal to the height of the raised portion. The hammer corners are beveled to permit more facing material at the corners. Mounting pin holes are provided adjacent each end of the hammer such that it may be reversed when worn.

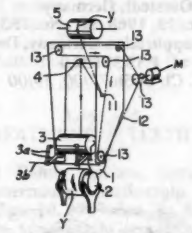
3,561,687
CONDUCTOR WRAPPING BIT
Adolph G. Bergmann, Barrington, R.I., assignor to Ostby & Barton Co., a corporation of Rhode Island
Filed Feb. 23, 1968, Ser. No. 707,646
Int. Cl. H01r *43/00*
U.S. Cl. 242—7.17 **3 Claims**

A bit for wrapping a conductor around a terminal in successive convolutions in which the end face of the bit is formed by a channel extending across the face at generally right angles to the axis of the bit, said channel being symmetrical with reference to an opening for receiving the terminal



about which the conductor is wound with the sides of the channel providing the camming surfaces for urging the conductor against the terminal and axially along the terminal.

3,561,688
YARN TRANSFER METHOD IN THE WINDUP OPERATION
Shingo Hagihara; Akio Ando; Akemi Higashimoto, and Katsumi Hasegawa, Shiga-ken, Japan, assignors to Toyo Rayon Kabushiki Kaisha, Chuo-ku, Tokyo, Japan
Continuation-in-part of application Ser. No. 427,739, Jan. 25, 1965. This application May 24, 1968, Ser. No. 740,804
Int. Cl. B65h *54/02*
U.S. Cl. 242—18 **10 Claims**

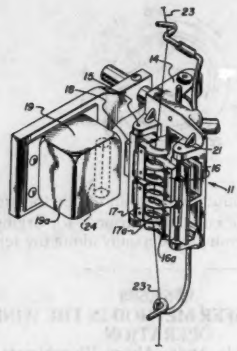


A method and apparatus for continuously winding yarn on a succession of bobbins. The apparatus has a travelling yarn guide mounted on a flexible member such as a chain or belt extending in a loop. The flexible member is driven in one or the other directions around the path of the loop. This crosses the path of the yarn coming from a yarn source and extending to a transversing guide for guiding yarn back and forth across the bobbin. The path of the flexible member also crosses the adjacent ends of the bobbin which have yarn catching means thereon. As the travelling guide moves along the path of the flexible member, it picks up the yarn and moves it so that it moves past the end of an empty bobbin and when the bobbin rotates, it picks up the thus moved yarn.

3,561,689
THREAD BREAK DETECTOR
Bert B. Morgan, Black Mountain, N.C., assignor to Northrop Carolina, Inc., Swannanoa, N.C., a corporation of North Carolina
Filed May 19, 1969, Ser. No. 825,632
Int. Cl. B65h *63/02*
U.S. Cl. 242—37 **7 Claims**

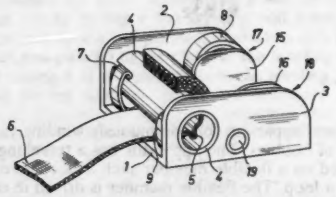
Thread being wound is passed through a tensioning device which includes a fixed member and a movable member which is urged towards the fixed member to tension the thread therebetween. A permanent magnet is attached to the movable member. A reed switch is positioned so that it is actuated when the magnet moves to within a predetermined distance therefrom, this proximate actuation position being attained when the thread breaks and the movable member

moves in response to the tensioning force applied thereto. The switch operates to actuate a suitable control device



which may operate a warning indicator and/or stop the thread-winding operation.

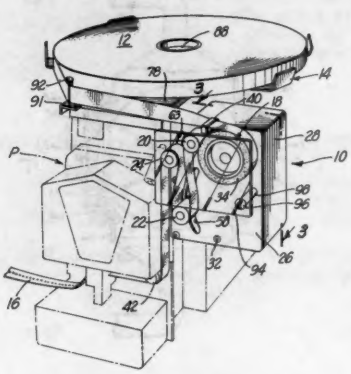
3,561,690
PLASTICALLY DEFORMABLE DAMPING MEMBER FOR MOTOR VEHICLE SAFETY BELTS
Kurt Muskat, Hamburg, Germany, assignor to Klippen GmbH, Hamburg-Garstedt, Germany
Filed Dec. 13, 1968, Ser. No. 783,690
Claims priority, application Germany, Dec. 15, 1967, P 15 31 524.9
Int. Cl. B65h *75/00, 59/00*
U.S. Cl. 242—54 **14 Claims**



An energy absorbing device for motor vehicle safety belts comprises a plastically deformable damping member. The damping member is in the form of at least one coil of metal tape one end of which is secured to a rotatable shaft about which a length of belt is wound. The fixed reaction member is so located relative to the coil and shaft that the withdrawal of the length of belt from the shaft as the result of a collision causes the shaft to rotate and the fixed reaction member to deform the tape as it is drawn past the reaction member from the coil and is wound onto the rotatable shaft.

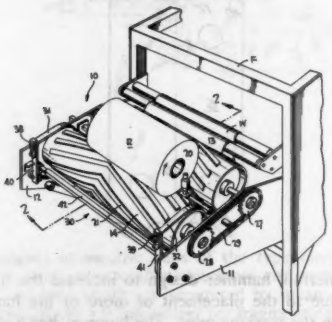
3,561,691
TAPE UNWINDING MEANS
William A. Nichols, 5617 Hawthorne, and Ralph E. Simpson, Montclair, Calif. (604 E. Arrows Hwy., Upland, Calif. 91786)
Filed Sept. 6, 1968, Ser. No. 758,012
Int. Cl. B65h *75/02*
U.S. Cl. 242—55 **10 Claims**

A device for automatically unwinding paper tape from a roll and feeding it, under gentle tension, to the output tape punch of a tape justifying computer. The device has a drive wheel, for tractively propelling the tape, and three rollers, one of which is mounted on a pivot arm and rides in a loop formed in the tape between the other two. Power is supplied to the drive wheel by a gear head motor which is automatically controlled by a mercury switch connected in series



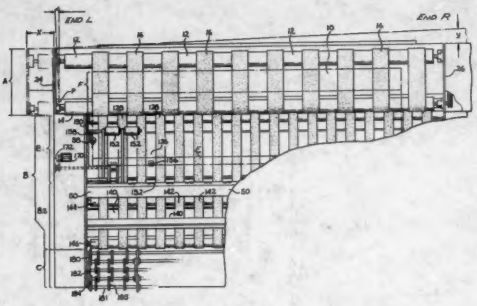
therewith and mounted on the above-mentioned pivot arm. As the tape slackens, the pivot arm moves downwardly and causes the mercury switch to turn off the motor.

3,561,692
WEB ROLL CRADLE FOR LOOSELY WOUND MATERIAL
Nelson R. Henry, Decatur, Ga., assignor to The Woodman Company, Inc., Decatur, Ga., a corporation of Georgia
Filed Feb. 19, 1969, Ser. No. 800,687
Int. Cl. B65h *75/02*
U.S. Cl. 242—55 **19 Claims**



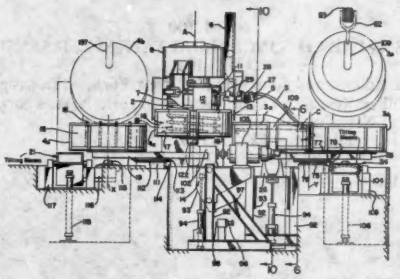
A cradle for supporting a web roll of material during an unwinding operation is provided wherein the outer turn of the web is maintained in a tight condition on the roll by rotation of the rear support roller at a differential speed slower than the forward roller. A control system is provided wherein flexible brake bands are adapted to engage the periphery of the rear roller and move in the direction opposite to the rotation of said roller in response to a dancer arm to brake the roll upon decrease in demand; said brake bands being driven in the direction of rotation of the roll upon restart of the unwinding operation or increase in demand to overcome the inertia of the roll. An improved roll centering system is provided wherein individual adjustment of the side guides as well as adjustment in unison for positioning the roll along the centerline of the cradle can be effected.

3,561,693
YARDAGE APPARATUS
John R. Ulyate, Torrance, Calif., assignor to Scorpion, Inc., Los Angeles, Calif., a corporation of California. by mesne assignments
Filed Feb. 3, 1969, Ser. No. 796,036
Int. Cl. B65h 25/10, 25/26
U.S. Cl. 242—57.1 13 Claims



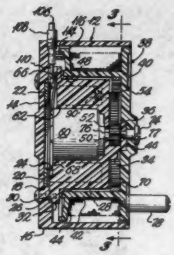
A yardage apparatus having a laterally movable and pivotable receptacle for supporting and unwinding a source roll of sheet material; a feed table having photoelectric means for laterally aligning the material to keep the edges continuously even to eliminate "coning" on the generation of a new roll; a control system for pivoting the receptacle to compensate for any skewness in the position of the source roll; and, a reroll mechanism. Both the receptacle and the reroll mechanism are capable of dumping their respective rolls when desired without manual handling.

3,561,694
STRAND HANDLING APPARATUS
James W. Schuetz, Pittsburgh, Pa., assignor to Blaw-Knox Company, Pittsburgh, Pa., a corporation of Delaware
Filed Oct. 22, 1968, Ser. No. 769,690
Int. Cl. B21c 47/00
U.S. Cl. 242—83 7 Claims



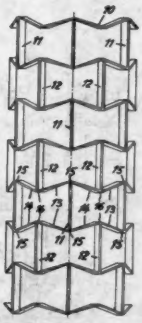
Apparatus for drawing strands such as tubing, rod or wire, in which the strand is drawn from a source such as a coil through a die onto a capstan or drum rotatable about a generally vertical axis and having a free lower end, on which capstan turns of strand are wound and over the free end of which the turns drop onto a receiving tray that rotates at essentially the same speed as the capstan and forms the dropped turns into a coil. The tray has inner and outer upstanding guard means that define between them a generally annular channel in which the coil is formed. The tray in receiving position is located at the free end of the capstan so its inner guard means is in close proximity to and under the free end of the capstan and its outer guard means is radially spaced outwardly from the capstan and cooperates with guard means surrounding the capstan and independent of the tray to provide a protected generally annular zone through which the strand drops into the channel of the tray. After the coil is formed, the tray may be lowered to clear the capstan and moved laterally to a position where coil can be removed.

3,561,695
ELECTRIC FLY REEL
Garfield A. Wood, Jr., 4565 Sabal Palm Road, Miami, Fla.
Filed Dec. 8, 1967, Ser. No. 689,174
Int. Cl. A01k 89/00
U.S. Cl. 242—84.1 3 Claims



An electric fly reel having a handle for rotating the spool in a conventional manner to reel in a fish and a miniature electric motor for rotating the spool with sufficient torque to reel in slack in the line. The motor is powered by a plurality of small pen cell batteries mounted on the reel.

3,561,696
SLEEVE FOR TREATMENT OF TEXTILE THREADS AND YARNS
Gerhard Herbert Hahm, Aachen, Germany, assignor to Messrs Jos Zimmermann, a partnership
Filed June 10, 1969, Ser. No. 831,934
Claims priority, application Germany, June 15, 1968, P 17 60 652.9
Int. Cl. B65h 75/20, 75/24
U.S. Cl. 242—118.11 5 Claims



A textile treatment sleeve has a shell, which may be cylindrical or conical. The shell has peripherally extending rings which are spaced-apart and which are axially yielding. The rings are connected by spaced-apart webs which are rigid and extend longitudinally. Axially consecutive webs are laterally offset relatively to one another.

3,561,697

SLEEVE FOR TREATMENT OF TEXTILE THREADS AND YARNS

Josef Egyptien, Aachen, Germany, assignor to Messrs Jos Zimmerman, a partnership

Filed June 10, 1969, Ser. No. 831,955
Claims priority, application Germany, June 15, 1968, P 17 60 651.8
Int. Cl. B65h *75/20, 75/24*
U.S. Cl. 242—118.11 8 Claims

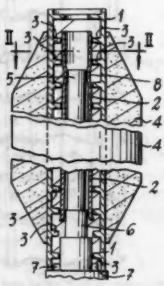
A textile treatment sleeve has a shell, which may be cylindrical or conical. The shell has uniformly distributed elements yielding in two diagonal directions and is thereby capable of shortening axially and radially. The shell also has rigid diagonal webs connecting the uniformly distributed yielding elements.

3,561,698

YARN-SUPPORTING BODY MEMBER

Francesco Steffenini, Via Pizzi 28, Milan, Italy

Filed May 7, 1968, Ser. No. 727,259
Claims priority, application Italy, May 12, 1967, 16026A/67
Int. Cl. B65h *75/10, 75/30*
U.S. Cl. 242—118.31 8 Claims



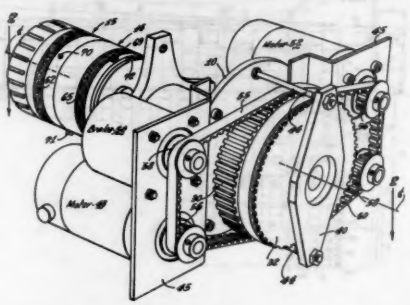
Yarn-supporting body member comprising an external wall and an internal hub. The external wall is carried by the hub through ribs or the like projecting from said wall, or from said hub, or a material filling the gap between the wall and hub. The deformations as induced by the yarn wound up on the external wall will transmit a stress to the hub, without deforming the latter.

3,561,699

DUAL HUB ASSEMBLY FOR REELS

Peter L. Garrett, Malibu, and Donald C. Houk, Simi, Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn., a corporation of Delaware

Filed Nov. 27, 1968, Ser. No. 779,351
Int. Cl. G03b *1/04*; G11b *15/32*; B65h *75/18*
U.S. Cl. 242—193 24 Claims



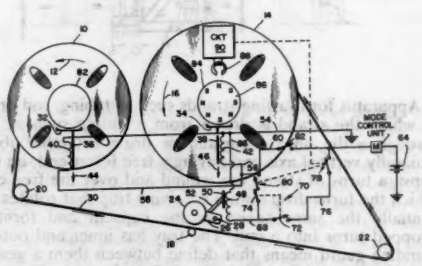
An assembly for mounting in an opening in a panel to drive two reels reversibly for driving a magnetic recording tape reversibly comprises: a spool-shaped housing attachable to the rear of the panel; two coaxial shafts extending through the housing and the opening in the panel; two coaxial hubs on the front ends of the two shafts, respectively; outer circumferential elastomeric rings on the two hubs respectively; screw means incorporated in the two hubs, respectively, to compress the corresponding elastomeric rings for radial bulging of the rings into binding engagement with the two corresponding reels; two motors on the rear end of the housing to drive the two coaxial shafts respectively; two electrically actuated brakes adapted when deenergized to retard the two coaxial shafts respectively; and two oppositely oriented one-way clutches connecting the two brakes to the respective shafts so that when the power supply fails with resultant deenergization of the two motors and the two brakes, the brake for whichever reel is functioning as a supply reel retards the supply reel with the other takeup reel freewheeling.

3,561,700

TAPE APPARATUS INCLUDING TAPE SPEED SENSING DEVICE

George Adams, and John Hawkins, New York, N.Y., assignors to United Research Laboratory, New York, N.Y., a corporation of New York

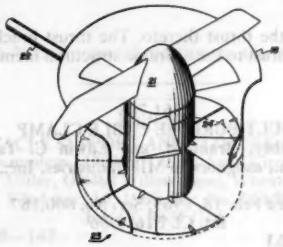
Filed May 12, 1969, Ser. No. 823,922
Int. Cl. B11b *15/32*; G03b *1/04*; G11b *15/60*
U.S. Cl. 242—206 9 Claims



A magnetic wheel having a plurality of north and south poles arranged on the shaft of a takeup reel of a tape apparatus in which tape is fed to the takeup reel via a capstan

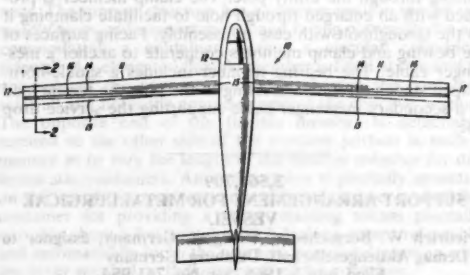
from a supply reel. The tape is urged against the capstan by a pinch roller and the magnetic wheel is employed to generate a signal which is employed to disengage the pinch roller under certain circumstances in which the tape might otherwise break.

3,561,701
VERTICAL TAKEOFF AND LANDING AIRCRAFT
Wilbert A. Kalk, 416 S. Susana Ave., Redondo Beach, Calif.
Filed Mar. 5, 1969, Ser. No. 804,391
Int. Cl. B64c *29/00*
U.S. Cl. 244—12 2 Claims



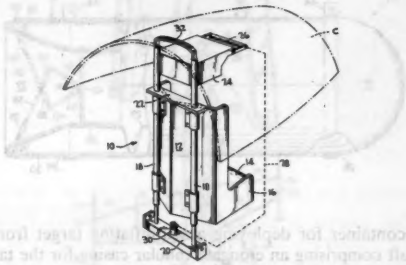
A vertical takeoff and landing aircraft which consists of a high wing monoplane having the wing mounted on top of the fuselage cabin section with first and second fan wells in the top of the wing in which are mounted first and second fans, respectively; first and second ducts disposed beneath the first and second fans and communicating with exhaust ports below the bottom of the wing; the ducts being formed by a plurality of pie-shaped segments which are rotatably mounted on a radial axis in the fan well for being rotated to a vertical position which will create straight cylindrical ducts and allow the fans to propel the vertical takeoff and landing aircraft in a vertical direction and when closed, form helical ducts for exhausting in a rearward direction under the wing for a forward propulsion of the vertical takeoff and landing aircraft.

3,561,702
SWEPT WING VARIABLE PITCH SAILPLANE
Edward B. Jones, General Delivery, Perryman, Md. 21130
Filed Nov. 1, 1968, Ser. No. 772,548
Int. Cl. B64c *31/02*
U.S. Cl. 244—16 6 Claims



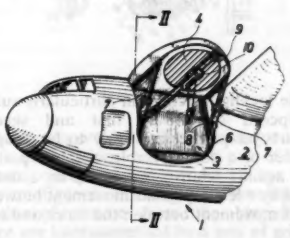
A sailplane is provided in which the line-of-lift of the wing is swept back from the longitudinal elastic axis to give an automatic wing twist with change of lifting force. In operation, a reduction in the angle of incidence from an updraught wind results in a trade of lift for greater forward thrust. An increase in angle of incidence from a downdraught wind results in a trade of forward momentum for greater lift. This is most effective under turbulent air conditions.

3,561,703
CANOPY BREAKING BY SHAPED CHARGE
Fred B. Stencel, Asheville, N.C., assignor to Stencel Aero Engineering Corporation, Arden, N.C., a corporation of North Carolina
Filed July 7, 1969, Ser. No. 839,195
Int. Cl. B64d *25/10*
U.S. Cl. 244—122 9 Claims



A device for breaking the canopy overlying an aircraft ejection seat prior to the time that the seat contacts the canopy. An explosive shaped charge is provided for directly blasting an opening in the canopy and detonating means are provided for exploding the charge. Movable means, advantageously in the form of canopy breaker means are provided for movement toward the underside of the canopy as a seat ejection operation is initiated and the detonating means explodes the charge at substantially the same time as the canopy breaker means contacts the underside of the canopy. As the charge blasts an opening in the canopy, the breaker means continues moving through the canopy to enlarge the opening, if necessary.

3,561,704
ARRANGEMENT OF THE OPENINGS TO LOADING COMPARTMENTS IN VERTICAL TAKEOFF AND LANDING AIR VEHICLES
Carsten Schulze, Renton, Wash. Vereinigte Flugtechnische Werke Gesellschaft mit beschrankter Haftung fruher Weser Flugzeugbau Focke-Wulf Heinkel Flugzeugbau, Bremen, Germany
Filed July 10, 1968, Ser. No. 743,727
Claims priority, application Germany, July 14, 1967, P 1,531,467
Int. Cl. B64c *1/14*; B64d *29/00*
U.S. Cl. 244—137 1 Claim



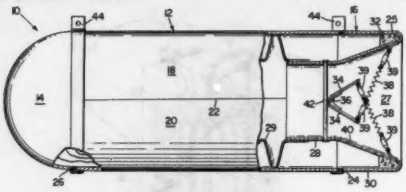
An airplane adapted to vertical take off and landing which includes a fuselage comprising cargo chamber means having opening means for loading cargo into and unloading cargo from said cargo chamber means, and means pivotally connected to said fuselage, said last mentioned means comprising lifting means and simultaneously forming closing hatch means for selectively opening and closing said opening means.

3,561,705

SELF-INFLATING TARGET DEPLOYMENT CONTAINER

Raymond S. Daughenbaugh, 860 S. LaLuna, Ojai, Calif. 93023

Filed Feb. 24, 1969, Ser. No. 801,594
Int. Cl. B64d *1/02*
U.S. Cl. 244—138 **6 Claims**



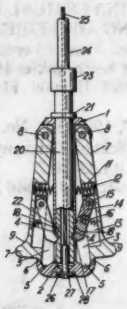
A container for deploying a self-inflating target from an aircraft comprising an elongate tubular casing for the target. a nose cap and a weighted tail portion which also serves as an airscoop. Upon release from the aircraft the weighted tail portion orients the container vertically. A valve positioned in the airscoop controls the amount of air entering the target to prevent target ejection and inflation until the falling container and target have decelerated to a safe opening speed.

3,561,706

PARACHUTE RELEASE CONTROL HANDLE

James Martin, Southlands Manor, Southlands Road, Denham near Uxbridge, Middlesex, England

Filed June 4, 1969, Ser. No. 830,292
Claims priority, application Great Britain, June 6, 1968, 27,064/68
Int. Cl. B64d *17/52*
U.S. Cl. 244—149 **6 Claims**



A releasable locking mechanism particularly suitable for a parachute ripcord comprising first and second intertelescoped parts adapted respectively to be coupled to the inner and outer of a control cable, the two parts normally being locked against relative movement by a detent which, when released by a lever, permits movement between the two parts and thus movement between the inner and outer of the cable.

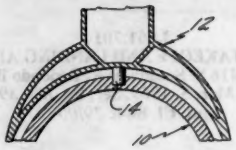
3,561,707

THRUST MOUNT

William J. Strock, Hartford, Conn., assignor to United Aircraft Corporation, East Hartford, Conn., a corporation of Delaware

Filed June 24, 1969, Ser. No. 836,005
Int. Cl. B64c *1/14*; **B64d** *27/16*
U.S. Cl. 248—5 **6 Claims**

A thrust mount construction for transmitting thrust developed in an engine to an airframe structural member. A thrust boss on the engine cooperates with a thrust bracket and transmits the thrust thereto. The thrust bracket in turn transmits the thrust to the airframe structural member.

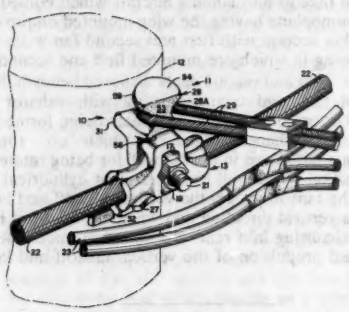


3,561,708

MULTIPURPOSE CABLE CLAMP

George A. Dubey, Branford, and Edwin C. Taylor, New Haven, Conn., assignors to MIF Industries, Inc., Branford, Conn.

Filed Feb. 18, 1969, Ser. No. 800,187
Int. Cl. F16l *3/06*
U.S. Cl. 248—63 **7 Claims**



A multipurpose pole line clamp for clamping utility cables and for supporting service drops. The clamp comprises a bearing member and a clamp member. The bearing member is provided with a tapped hole engaging a throughbolt extending through the utility pole. The clamp member is provided with an enlarged through hole to facilitate clamping it on the throughbolt with ease of assembly. Facing surfaces of the bearing and clamp members cooperate to anchor a messenger cable. The bearing member includes a saddle-horn-shaped stanchion for transferring to the pole the tensile load of a secondary messenger cable supporting the service drop line.

3,561,709

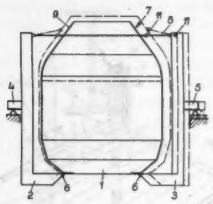
SUPPORT ARRANGEMENT FOR METALLURGICAL VESSEL

Friedrich W. Bornscheuer, Stuttgart, Germany, assignor to Demag Aktiengesellschaft, Duisburg, Germany

Filed July 2, 1968, Ser. No. 741,954
Claims priority, application Germany, July 13, 1967, 1,583,234
Int. Cl. A47f *5/12*
U.S. Cl. 248—141 **11 Claims**

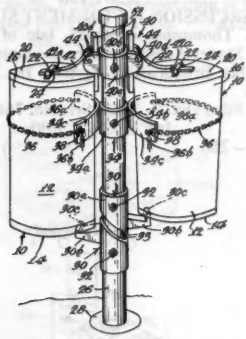
A support arrangement for a metallurgical vessel tiltable about a pair of coaxial trunnions rotatable in bearings on a frame, one bearing being fixed and the other displaceable, includes a pair of upright supports each carrying a respective trunnion, with the supports interconnecting the bottom and the open top of the vessel independently of each other.

Respective connecting elements interconnect the upper end of each support to the top of the vessel, and the supports are



in adjacent laterally spaced relation to the sidewall of the vessel.

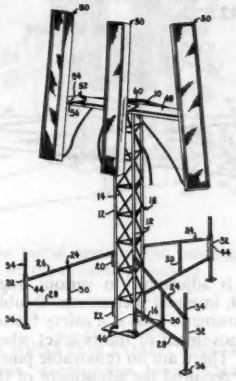
3,561,710
RECEPTACLE SUPPORT AND CLOSURE OPERATOR
Ralph J. Cummings, 1904 S. Cicero Ave., Cicero, Ill. 60656 and Paul Miller, ON468 Willow Road, Wheaton, Ill. 60187
Filed Apr. 10, 1969, Ser. No. 814,904
Int. Cl. B65f *1/16*
U.S. Cl. 248—147 **1 Claim**



An adjustable stand assembly for use with refuse containers or the like having various diameters or lateral dimensions and having an upper end, a lower end and a cover removably secured on the upper end. The stand assembly includes an upright support structure having vertically adjustable support means on which the lower end of the container rests. The support structure has a concave portion spaced upwardly from said support means and facing outwardly for accommodating a container having a circular cylindrical sidewall. An elongated flexible member is fixed at one end to one side of the concave portion, embraces the container sidewall and holds the container against the concave portion. The opposite end of the flexible member is detachably secured to the other side of the concave portion in such a manner as to vary the length of the flexible member for different size containers. An arm member is pivotally mounted on the upright support structure above the upper end of the container for providing a cover-retaining means pivotally movable about a horizontal axis. A locking means releasably and automatically locks the arm in a horizontal position with the cover secured on the upper end of the container.

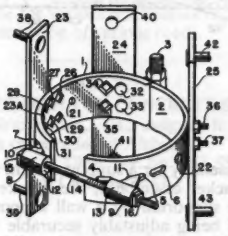
3,561,711
PORTABLE TOWER
Dwight V. Dodge, 1817 McAlister, Topeka, Kans. 66604
Filed July 2, 1969, Ser. No. 838,404
Int. Cl. F16m *11/32*
U.S. Cl. 248—163 **8 Claims**

A portable tower having interconnected uprights, each being provided with transversely square, tubular, vertically extending sockets. Outriggers having shanks telescoped within the sockets extend outwardly from the uprights and receive vertically extending leg members telescoped in



sleeves carried by the outriggers. Holes in each sleeve and leg member are alignable to provide vertical adjustment of the leg members for accommodating uneven surfaces.

3,561,712
ADJUSTABLE SUPPORT DEVICE
Joe B. Newsome, East Point, Ga., assignor to Southern States, Inc., a corporation of Georgia
Filed Jan. 24, 1969, Ser. No. 793,829
Int. Cl. F16m *13/00;* **E04h** *12/00*
U.S. Cl. 248—221 **2 Claims**

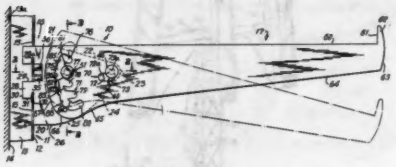


An adjustable support device for mounting on poles of different sizes is disclosed and comprises a pair of hingedly connected arcuate clamping elements which are of generally semicircular configuration arranged to envelop a pole and the ends thereof remote from the hinged connection therebetween are interconnected by a pair of gripping hooks which cooperate with gripping apertures formed in the ends of the clamping elements. The gripping hooks are adjustable relative to each other by means of a threaded connector. A plurality of mounting brackets are disposed about the periphery of the support device and are adjustable in a peripheral direction relative to the support device, the mounting brackets being particularly well adapted for supporting electric apparatus such as disconnect switches and the like. Apertures are provided in the clamping elements into which spikes or lugs are inserted for securing the clamping element positively to the associated pole.

3,561,713
ANGULARLY ADJUSTABLE SHELF BRACKET

Irving L. Berkowitz, Binghamton, N.Y., assignor to Kason Hardware Corporation, Binghamton, N.Y., a corporation of New York

Filed Jan. 15, 1969, Ser. No. 791,341
Int. Cl. A47g 29/02
U.S. Cl. 248—242 15 Claims

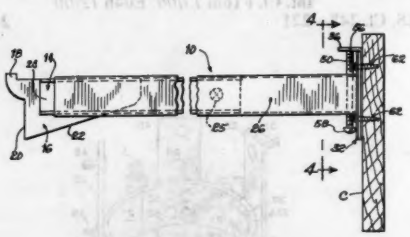


This bracket is adjustable to various angles above and below horizontal, in equal increments. Double movement is required for adjustment. This is a safety feature for preventing accidental movement of the bracket when used in support of shelving. There are no removable pins, and loosening of screws is not required for adjustment of the angle of the bracket. One person can make the adjustment. The ratchet design of the adjustable bracket provides secure locking thereof. No right and left hand brackets are required.

3,561,714
BRACKET ASSEMBLY AND SUPPORT SYSTEM

Edward F. Zurawski, Niles, and Richard R. Ruhnke, Skokie, Ill., assignors to Garcy Corporation, a corporation of Illinois

Filed Feb. 28, 1969, Ser. No. 803,314
Int. Cl. A47g 29/02
U.S. Cl. 248—243 7 Claims



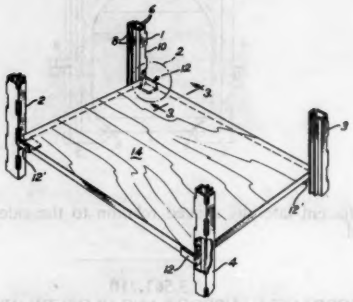
A bracket assembly for a support system utilizing a plurality of such bracket assemblies, the bracket assembly being adapted to be supported by a wall support and to project therefrom and being adjustably securable to a cornice, the bracket assembly including a member slideably movable on the free end thereof, and having cornice connector means and an adjustable member engaging the slideable member for raising and lowering the slideable member with respect to the free end.

3,561,715
SHELF CONSTRUCTION FOR RACKS

Herbert Klein, Arlington Heights, Ill., assignor to Unarco Industries Inc., a corporation of Illinois

Filed Apr. 21, 1969, Ser. No. 817,642
Int. Cl. A47b 57/24
U.S. Cl. 248—243 5 Claims

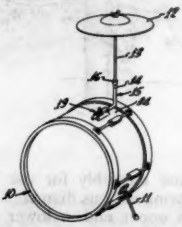
A removable shelf-mounting clip, for supporting sheets of shelving material on upright posts of a storage rack, is provided as an integral unit shaped to define a post-entering finger and two flanges at right angles to each other. The flanges serve dual purposes of engaging the post to stabilize the clip and to support and maintain a shelf on the clip. The finger and two flanges lie in three planes each of which is perpendicular to the other two planes. One flange has a post-engaging edge which is spaced from the plane of the finger by an amount substantially equal to the thickness of the material which forms the post so as to receive the post therebetween when the clip is mounted upon the post.



3,561,716
PERCUSSION INSTRUMENT SUPPORT

Josephus B. Thompson, deceased, late of Covington, Ohio, by K. E. Stade, Administrator, Covington, Ohio, assignor to Columbia Broadcasting System, Inc., a corporation of New York

Filed Oct. 9, 1968, Ser. No. 766,047
Int. Cl. A47f 5/00
U.S. Cl. 248—286 6 Claims



An adjustable support for cymbals and other small percussion devices (traps), wherein a lug has provided therein means to define elongated parallel rails having relatively sharp edges. Mounted in the lug, and adjacent such rails, is a generally cylindrical shaft in which is formed a large number of longitudinal grooves adapted to receive the rail edges. A setscrew is provided to force the shaft against the rails, so that the rail edges seat in the grooves and lock the shaft against rotation whereby to prevent undesired movement of the cymbal (or other percussion device) which is connected to the shaft.

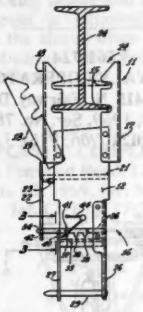
3,561,717
CONNECT-DISCONNECT FIXTURE

Thomas M. Frederick, Palos Verdes, and Leslie W. Baxter, Palmdale, Calif., assignors to Northrop Corporation, Beverly Hills, Calif., a corporation of California

Filed May 1, 1969, Ser. No. 820,954
Int. Cl. B66d 3/00
U.S. Cl. 248—317 6 Claims

A transportation and hanger assembly including means enabling the assembly to be releasably secured to overhead structure while retaining relative large components thereon

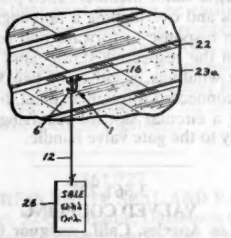
in a releasable, suspended and locked relation and incorporating means precluding the possibility of electrolytic action between components carried by the fixture and overhead structure to which the fixture is attached.



3,561,718
HANGER FOR ADVERTISING DISPLAYS

Peter B. Iverson, Excelsior, Minn., assignor to Postmark Corporation, Minneapolis, Minn., a corporation of Minnesota

Filed Jan. 31, 1969, Ser. No. 795,612
Int. Cl. A47f *7/00*
U.S. Cl. 248—340 **1 Claim**



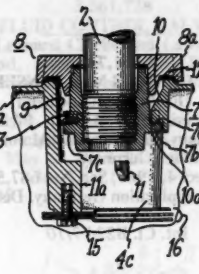
An advertising display hanger having a deformable and flexible hooked end which will collapse inwardly as it is forced into a tubular mounting pole in frictional engagement therewith, the removable mounting pole being used to install the hanger on a ceiling frame member by means of a laterally extending flange on the hanger. Alternatively, the hooked end may be secured over a support member such as a fluorescent light bulb; in either case an aperture in the hanger receives a string from which a display may be suspended.

3,561,719
LIGHT FIXTURE SUPPORT

James L. Grindle, Hendersonville, N.C., assignor to General Electric Company, a corporation of New York

Filed Sept. 24, 1969, Ser. No. 860,676
Int. Cl. F21v *21/00, 21/14*
U.S. Cl. 248—343 **8 Claims**

Hanger device for supporting industrial luminaire from ceiling conduit. Cover of ballast housing at top of luminaire has central aperture for receiving conduit and a mounting bushing threaded internally for engaging threaded conduit and threaded externally for engaging locking nut slidably positioned on conduit above the luminaire cover. The central aperture of the cover is formed with spaced inwardly directed lugs against which complementary radial arms of the mounting bushing are clamped upon tightening of the locking nut. The luminaire is hung on the conduit by pushing it upwardly over the mounting bushing attached to the conduit, turning it until the radial lugs of the cover aperture are aligned with the radial arms of the bushing, and tightening the locking nut on the mounting bushing.



3,561,720
RECESS JOINT FOR ROAD CONSTRUCTION

Franklin T. White, Morning Sun, Iowa 52640

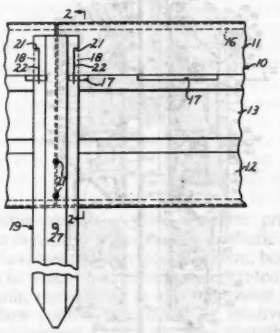
Filed Aug. 5, 1968, Ser. No. 750,191
Int. Cl. E01c *11/02*
U.S. Cl. 249—9 **1 Claim**

A recess joint for road construction having feet attachable thereto which may be of various heights so as to make the recess joint useable for various thicknesses of concrete to be poured in the construction of various roads.

3,561,721
JOINT MEMBER FOR CONCRETE SLABS

Ernest H. Self, Birmingham, Ala., assignor to Vulcan Metal Products, Inc., a corporation of Alabama

Filed Aug. 9, 1968, Ser. No. 751,552
Int. Cl. E01c *11/02*
U.S. Cl. 249—9 **3 Claims**



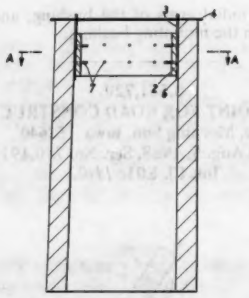
A joint member for concrete slabs embodying a vertical stake carrying an ear extending upwardly alongside and in

spaced relation to the stake for receiving therebetween a portion of a screed sheet. A barb carried by the ear extends toward the stake and cuts into a side of the screed sheet inserted therebetween.

3,561,722
STEEL CASTING MOLD INSERT

Helmut Kobusch, Duisburg-Mundelheim; Walter Pfaff, Dusiburg-Huttenheim, and Arnold Pfeiffer, Duisburg-Huckingen, Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Dec. 4, 1967, Ser. No. 687,547
Claims priority, application Germany, Dec. 20, 1966, M72083
Int. Cl. B22d *7/10*
U.S. Cl. 249—198 **1 Claim**

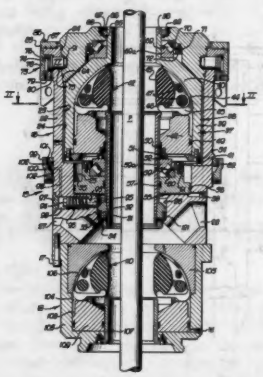


An insert for steel casting molds which consists of four individual heat-insulating plates. These plates are reinforced with steel sheets or rods on their sides facing the mold walls. When the molds are filled with liquid steel, the reinforcements fuse with the ingot upon cooling, and the insert leaves the mold together therewith. The insert remains on the ingot throughout reheating in a furnace prior to rolling and is discarded only in the roller mill as scrap. The device and the process of using the same reduce segregation and cavitation in the ingot, also considerably reduce scrap formation and lengthen the working life of the molds.

3,561,723
STRIPPING AND BLOW-OUT PREVENTER DEVICE

Edward T. Cugini, 429 Catalpa, Brea, Calif. 92621

Filed May 7, 1968, Ser. No. 727,165
Int. Cl. E21b *33/06*
U.S. Cl. 251—1 **11 Claims**

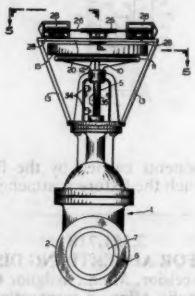


Stripping and blowout preventer devices for use in well drilling operations, particularly in off shore subsea well drilling, to prevent fluid escaping from the well in the presence or absence of a well tool such as a pipe string, while rotating or stationary, or during removal of the string from the well hole.

3,561,724
GATE VALVE OPERATOR

Guido P. Trombetta, 9415 N. Fairway Drive, Bayside, Wis.

Filed Jan. 8, 1969, Ser. No. 789,741
Int. Cl. H02k *7/06;* **F16k** *31/05*
U.S. Cl. 251—130 **12 Claims**

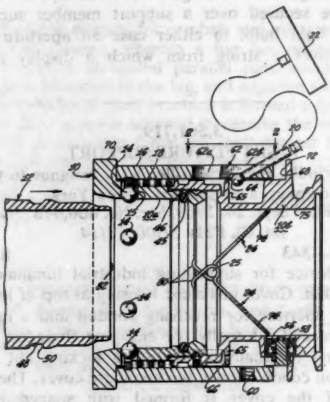


An electric, direct drive, lost motion operator for opening and closing a gate valve. The apparatus comprises two pairs of modified electric stator members each pair being disposed at opposite sides and overlapping a nonmagnetic metal disc, which rotates in response to forward and reverse flux fields created between the respective stator pairs upon energizing their respective windings in either of two ways. The metal disc is directly connected through an axial, hollow sleeve to a flywheel having a circular slot for receiving a driving block attached directly to the gate valve handle.

3,561,725
VALVED COUPLING

Jorge Torres, Los Angeles, Calif., assignor to Purolator Inc., Rahway, N.J., a corporation of Delaware

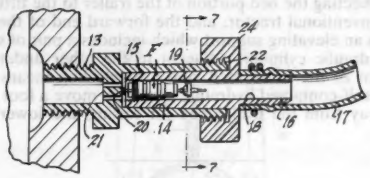
Continuation of application Ser. No. 547920, May 5, 1966, now abandoned. This application July 7, 1969, Ser. No. 845,632
Int. Cl. F16k *51/00;* **F16l** *35/00;, 27/00*
U.S. Cl. 251—149.2 **4 Claims**



A coupling on a hose for releasable connection to a jet engine for starting the jet engine by heated compressed air has

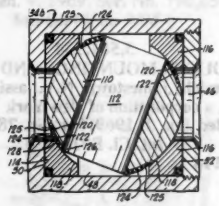
a valve to prevent the hose from whipping around when disconnected. The valve comprises two leaves that diverge upstream to be closed and held closed by fluid pressure and the two leaves are opened in response by coupling the hose to the engine. A locking sleeve that is movable to lock the engine-engaging means is mounted between two radial flanges that protect the sleeve when the end of the hose is dropped onto a hard surface. The locking sleeve is equipped with a removable lanyard.

3,561,726
PLASTIC COUPLING
Frank M. Iannelli, 5 Penwood Road, Livingston, N.J. 07039
Filed Feb. 18, 1969, Ser. No. 800,113
Int. Cl. F16l *37/28*
U.S. Cl. 251—149.6 **2 Claims**



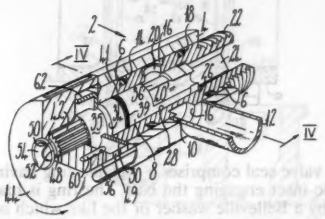
A coupling comprises two sections molded of polymeric plastic material which is tough and hard but possesses a small degree of elasticity, one section having a tubular interior frustoconical recess at one end with which mates an exterior frustoconical portion on one end of the other section, whereby said sections can be frictionally connected to each other with a fluid-tight joint and can be easily separated, by merely relatively rotating them and respectively pressing them together and pulling them apart. One or each section may have a spring closed valve that is opened when the sections are connected. Also, each section may have an integral element coactive with the element on the other section for separably locking the sections together.

3,561,727
HIGH STRESS VALVE SEAL AND VALVES
Domer Scaramucci, 3245 S. Hattie, Oklahoma City, Okla.
Continuation-in-part of application Ser. No. 435,797, Mar. 1, 1965, now abandoned , Continuation-in-part of application Ser. No. 641,415, May 8, 1967, now abandoned, which is a continuation-in-part of application Ser. No. 435,975, Mar. 1, 1965, now abandoned. This application Jan. 25, 1968, Ser. No. 703,845
Int. Cl. F16k *3/02, 5/06*
U.S. Cl. 251—172 **31 Claims**



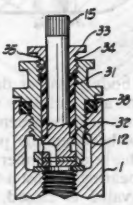
A valve seat assembly including a rigid material seating ring having a seating surface shaped to engage a movable valve member when the valve member is in a closed position, and including a thin, elastic material annular seal bonded to the seating ring adjacent the seating surface. The seal protrudes beyond the seating surface to be engaged by the valve member and has a length substantially greater than the thickness thereof to be placed in a high state of stress when distorted by the valve member. The seat is particularly suited as an upstream seat, and the seal is preferably positioned adjacent the inner periphery of the seat to minimize abrasive wear and throttling when the valve approaches full closure.

3,561,728
FLUID CONTROL VALVES
Terence James Leonard Clarke and Lawrence Mawbey, Leicester, England, assignors to The British United Shoe Machinery Company Limited, Leicester, England, a British Company
Filed Jan. 13, 1969, Ser. No. 790,546
Claims priority, application Great Britain, Jan. 18, 1968, May 25, 1968, 2658;25120
Int. Cl. F16k *51/00*
U.S. Cl. 251—285 **17 Claims**



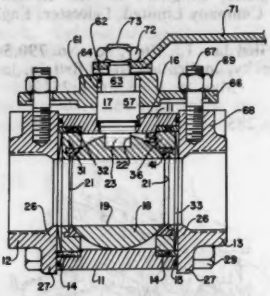
The invention relates to fluid-flow means, in particular connectors for fluid-flow devices and fluid-control valves and is especially concerned with fluid-control valves for use in control of flow of water through radiators of central heating systems, connector assemblies for such radiators and radiator assemblies. Fluid-control valves comprising a rotary control member by which flow of fluid through a circuit element e.g. a radiator can be controlled, connector assemblies comprising a housing in which is rotatably mounted a tubular member which can be connected to a circuit element and radiator assemblies comprising a radiator to which two connector assemblies are connected in axial alignment so that the radiator may be swung away from a wall without interrupting flow through the radiator, are described.

3,561,729
CARTRIDGE TYPE VALVE INCLUDING STEM, BONNET AND SEAT
William E. Politz, Delphi, Ind., assignor to Stephen A. Young, Monticello, Ind.
Filed Oct. 2, 1968, Ser. No. 764,568
Int. Cl. F16k *5/00*
U.S. Cl. 251—287 **6 Claims**



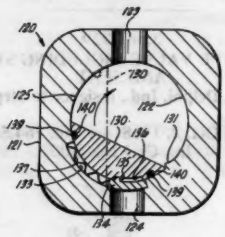
This invention consists of valve structure, primarily structure useful in regulating water flow in domestic or like applications, and involves the provision of a stem, bonnet and seat arrangement in which the elements enumerated are included in a single unit, replaceable in and removable from a valve body. The flow control is effected by relative rotation of discs or disc elements having passages therethrough which are brought into alignment, a single passage through the stem providing for direction of flow from an inlet to an outlet through the sealing and seat means.

3,561,730
BALL VALVE CONSTRUCTION
Gordon F. Hurst, 540 Callan Ave., San Leandro, Calif. 94577
Filed May 2, 1968, Ser. No. 726,071
Int. Cl. F16k 5/06
U.S. Cl. 251—315 12 Claims



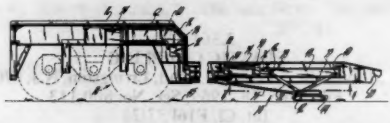
A ball valve seal comprises a metallic ring having an annular plastic inset engaging the ball. The ring is biased toward the ball by a Belleville washer or the like which is backed by an end cap. Surrounding the metallic ring is a stationary outer ring, which may be of chevron construction and permits sliding of the metallic ring to accomplish a tight seal despite movements of the ball under pressure changes. Both an upstream and downstream seal is effected. Pressure relief from volatilization of liquids trapped within the body around the ball is provided by momentary deflection of the plastic inset on the upstream side.

3,561,731
VALVE WITH IMPROVED SEAL ASSEMBLY
William A. Rogers, 337 Broadway, Costa Mesa, Calif. 92626
Filed Jan. 24, 1969, Ser. No. 793,790
Int. Cl. F16k 5/00
U.S. Cl. 251—317 5 Claims



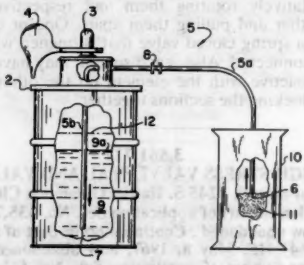
A valve having a body member defining a chamber with first and second ports, and a closure member movable in the chamber over the first port between open and closed positions to control flow between the ports. A resilient seal is mounted on either the body member or the closure member to seal the valve by bearing against a mating face of the other member when the valve is closed. A backup element is slidably mounted in the valve chamber to provide continuous confinement for the seal as the closure member is moved away from the closed position toward the open position. The backup element fits against the mating-face member when the valve is opened to define a substantially continuous smooth surface in sliding contact with the seal and against which the seal is compressed. The smooth surface formed by the mating-face member and the backup element is broken only by a line joint or seam between the member and element, and the seal passes easily over this joint without distorting or tending to extrude. After the closure member has retracted toward the open position sufficiently to pass the seal over the joint so the seal now bears entirely on the backup member, the closure member is further drawn past the first port to permit flow through the valve.

3,561,732
DETACHABLE GOOSENECK TRAILER WITH SELF-CONTAINED ELEVATING MEANS
Anthony S. Pulcini, 21 Elwood Road, Kensington, Conn.
Filed Oct. 17, 1968, Ser. No. 768,250
Int. Cl. B60s 9/02
U.S. Cl. 254—86 3 Claims



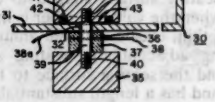
A low bed trailer is provided with a detachable gooseneck for connecting the bed portion of the trailer to the fifth wheel of a conventional tractor, and the forward end of the trailer bed has an elevating support which includes a pair of side-by-side hydraulic cylinders adjacent to the other underside of the floor of the trailer bed, and a toggle link means driven from a self-contained hydraulic system to move a foot toward and away from the trailer bed for raising and lowering the bed.

3,561,733
VACUUM SLURRY SYSTEM
Charles G. Formeck, Jackson Heights, and Leon J. Harris, Jr., Covington, Va., assignors to Westvaco Corporation, New York, N.Y., a corporation of Delaware
Filed July 30, 1968, Ser. No. 748,696
Int. Cl. B01f 5/10
U.S. Cl. 259—18 4 Claims



Powdered, activated carbon is mixed with a slurrying agent, such as water, by drawing the powdered carbon by means of a vacuum beneath the surface of the slurrying agent.

3,561,734
TRANSDUCER MOUNTINGS AND METHODS
John N. Antonevich, Jamestown, N.Y., assignor to Blackstone Corporation, a corporation of New York
Filed Jan. 2, 1969, Ser. No. 788,468
Int. Cl. B01f 5/26
U.S. Cl. 259—114 6 Claims



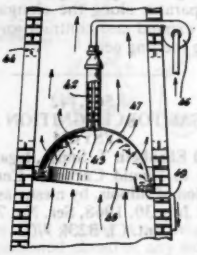
An ultrasonic transducer coupling system for fluid materials within a walled container is provided which couples the

output of transducers through the walled container directly to the fluid to be insonated by mechanically sandwiching the container wall at a low particle displacement plane of a composite transducer.

3,561,735
FLUID-BELL-SHEET FORMING APPARATUS

Millard F. Smith, P.O. Box 295, Westport, Conn. 06882

Continuation-in-part of application Ser. No. 734,805, June 5, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 617,398, Feb. 20, 1967, now abandoned, and a continuation-in-part of Ser. No. 477,987, May 10, 1965, now Patent No. 3,311,085, and a continuation-in-part of Ser. No. 513,366, Dec. 13, 1965, now Patent No. 3,422,795, and a continuation-in-part of Ser. No. 110,581, May 16, 1961, now abandoned. This application Apr. 14, 1969, Ser. No. 815,665
Int. Cl. B01f *3/04, 5/20;* B01d *47/06*
U.S. Cl. 261—34 **12 Claims**

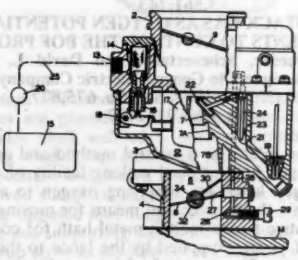


Fluid bell sheet forming apparatus incorporating a fluid delivery conduit provided with at least four flow straightening transverse screens, directing the stream of fluid issuing therefrom against a deflector positioned to spread the stream laterally, forming a thin, continuous outwardly moving sheet shaped by gravity to form a "fluid bell," to promote intermixing of the delivered fluid and the surrounding gas, or to facilitate the capture of entrained solid or liquid particles carried by the surrounding gas in the advancing bell-shaped fluid stream, or to expose the fluid stream thoroughly to incident radiation, such as sunlight or ultraviolet radiation. Extreme thinness of the continuous liquid sheet maximizes the ratio of exposed liquid surface to liquid volume, thus maximizing the effectiveness of the intermixing, entrainment and irradiation operations.

3,561,736
CARBURETOR THROTTLE VALVE

Silas Owen Dye, Highland, Ill., assignor to ACF Industries, Incorporated, New York, N.Y., a corporation of New Jersey

Filed Jan. 9, 1969, Ser. No. 790,054
Int. Cl. F02m *3/08*
U.S. Cl. 261—41 **6 Claims**

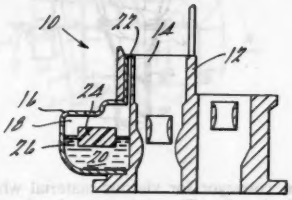


A carburetor having a conventional throttle valve for controlling the flow of air and fuel in the mixture conduit thereof is further provided with an auxiliary half-throttle arranged in such a manner that the half-throttle blocks off a portion of the mixture conduit during at least part of the opening movement of the conventional throttle thereby increasing air and fuel velocity in the mixing conduit at part throttle conditions.

3,561,737
CARBURETOR WITH FUEL BOWL EVAPORATION CONTROL MEANS

Paul E. Braun, Bloomfield Hills, and James R. Clarke, Northville, Mich., assignors to Ford Motor Company, Dearborn, Mich., a corporation of Delaware

Filed Jan. 28, 1969, Ser. No. 794,636
Int. Cl. F02m *5/12*
U.S. Cl. 261—72 **5 Claims**

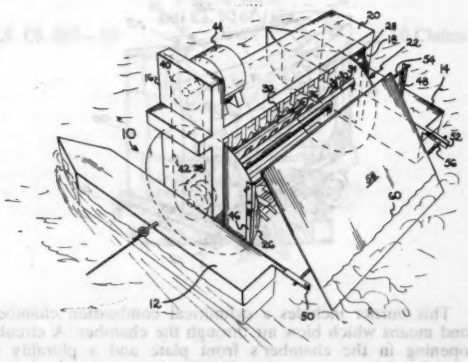


A carburetor for an internal combustion engine in which evaporation of fuel in the fuel bowl is controlled to promote desired engine operating characteristics and reduce engine evaporative emissions. The fuel bowl float member is surrounded by an impervious member coextensive with the surface of the fuel present in the fuel bowl. This impervious member allows freedom of movement of the float member but minimizes evaporation from the surface of the fuel and passage of evaporated fuel to the atmosphere through the fuel bowl vent.

3,561,738
AERATION APPARATUS

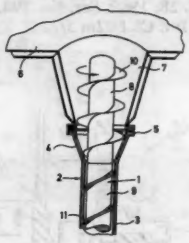
Sergio F. Galeano, Toledo, Ohio, assignor to Owens-Illinois, Inc., a corporation of Ohio

Filed Feb. 10, 1969, Ser. No. 798,198
Int. Cl. C02c *1/10*
U.S. Cl. 261—92 **1 Claim**



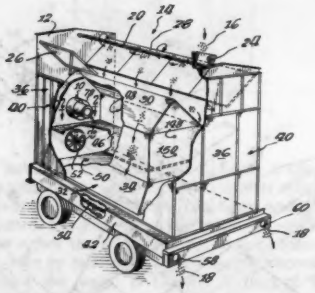
An improved liquid aeration device which comprises a power driven, floating cylindrical rotor structure with an inclined baffle located in the downstream portion of the rotor, the rotor being immersed and rotated through the liquid being aerated, thereby causing particles of the liquid to be impinged upon the baffle so as to cause substantial turbulence and the transfer of large quantities of air into the liquid.

3,561,739
SCREW CONVEYOR
Heinz Kuehne, Oberhoeschstadt, Taunus; Manfred Dietze, Offenbach am Main, and Franz Hauer, Frankfurt am Main, Germany, assignors to Vickers-Zimmer Aktiengesellschaft Planung und Bau von Industrieanlagen
Filed Sept. 9, 1968, Ser. No. 758,496
Int. Cl. F27b *9/16;* **B65h** *5/08*
U.S. Cl. 263—7 **11 Claims**



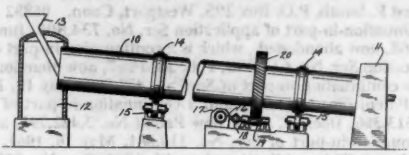
A screw conveyor for viscous material which includes a screw and a housing. The screw is made of a constant diametered shaft and a helical spiral web attached to the shaft surface. The housing includes an inlet region, a draw-in region and a constant diametered pressure region. The inlet region has a cross-sectional area larger than that of the pressure region, and the draw-in region connects those two regions. The web on the shaft of the screw has a constant width in the pressure region, but a greater width in the draw-in region. The configuration of the housing and web in at least a portion of the draw-in region combine to cause the edge of the web to come close to the wall of the housing during parts of a revolution of the screw and to leave a gap between the housing and the screw during other parts of the revolution.

3,561,740
CROP DRYING OIL BURNER
Donald C. Walker, Munster; John Bachi, Jr., Whiting, and Russell A. Hunt, Jr., Griffith, Ind., assignors to Standard Oil Company, Chicago, Ill., a corporation of Indiana
Filed Dec. 27, 1968, Ser. No. 788,696
Int. Cl. F24h *3/02*
U.S. Cl. 263—19 **12 Claims**



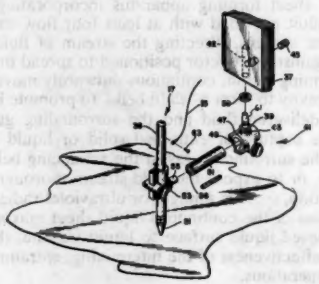
This burner includes a cylindrical combustion chamber, and means which blow air through the chamber. A circular opening in the chamber's front plate and a plurality of peripheral apertures and radial slits in the chamber's rear plate allow air to pass through the chamber. Pitched blades adjacent the slits cause this moving air to form a vortex within the chamber, and when oil is injected into the vortex and ignited, a clean, smoke-free flame shoots out the circular opening. If a centrifugal fan is used as the air blowing means, the chamber is ideally located in the quiet zone opposite the fan's hub. In this instance, air intercepting and directing means collect some air from the peripheral air stream generated by the fan, and direct this intercepted air into the chamber.

3,561,741
RING GEAR AND MOUNTING ASSEMBLY THEREFOR
William S. Richardson, Milwaukee, Wis., assignor to The Falk Corporation, Milwaukee, Wis., a corporation of Wisconsin
Filed May 12, 1969, Ser. No. 823,755
Int. Cl. F27b *7/00;* **F16h** *55/30, 55/12*
U.S. Cl. 263—33 **5 Claims**



A ring gear for driving a rotary apparatus that has an annular flange including radially elongated slots and the gear is bolted to the apparatus along the elongated slots to enable the apparatus to expand and contract, or otherwise deform, without distorting the ring gear.

3,561,742
MULTIPLE GAS TORCH IGNITION AND SUPPORT SYSTEM
Ira C. Smith, and Elizabeth T. Smith, legal heir, Moorestown, N.J., assignors to Liquid Carbonic Corporation, Chicago, Ill., a corporation of Illinois. by mesne assignments
Filed July 30, 1968, Ser. No. 749,262
Int. Cl. B23k *7/02*
U.S. Cl. 266—23 **4 Claims**

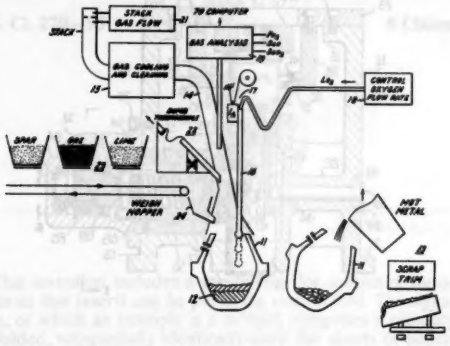


To ignite gas issuing from a plurality of flame cutting torches on a frame of a flame cutting machine, electrical spark discharges are caused from the tips of the torches to the metallic workpiece which is to be cut. Preferably, each torch is electrically insulated against being electrically grounded to the frame by an insulator which will fail if an excessive force is applied to its torch.

3,561,743
USE OF STACK GAS AS OXYGEN POTENTIAL MEASUREMENTS TO CONTROL THE BOF PROCESS
David L. Schroeder, Schenectady, and David L. Lippitt, Scotia, N.Y., assignors to General Electric Company
Filed Oct. 17, 1967, Ser. No. 675,877
Int. Cl. C21c *5/32*
U.S. Cl. 266—35 **12 Claims**

This invention relates to a control method and apparatus for a basic oxygen furnace steel making facility of the type having an oxygen lance for supplying oxygen to a molten metal bath within the furnace and means for moving the oxygen lance relative to the molten metal bath for controlling the partition of oxygen supplied by the lance to the molten metal bath. During the course of a heat, conditions are continuously sensed which are indicative of the oxygen content of the molten bath, the oxygen lance height and the oxygen lance flow rate to provide input data relative to the partitioning of the lance oxygen within the molten bath in the BOF vessel. This input data is processed by suitable computation means which derives measurements representative of the

temperature, carbon content and oxygen content of the molten bath during the course of the heat, as well as corrective output signals for the lance height and/or lance oxygen flow rate to optimize the process. The output control signals thus derived are then fed back in a dynamic, closed loop to control of the furnace to thereby optimize its operation. In a preferred embodiment of the invention the continuously sensed condition is the oxygen potential of the gases emanating from the furnace. The sensing is accomplished by a gas analyzer which is positioned ahead of any stack gas cleaning equipment located in the stack of the furnace, and which accordingly has a high response speed. The gas analyzer derives output measurement signals indicative of the oxygen partitioning of the lance oxygen, and these output measurement signals are employed to automatically and continuously control the position of the lance and the flow rate of the oxygen supplied therethrough to optimize the same during a heat.

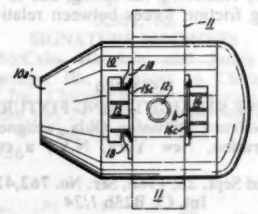


3,561,744

STABILIZED MOUNTING FOR BOF-LIKE VESSELS

Donald L. Altman, New Castle, and James A. Mullen, Jr., Hubbard, Pa., assignors to Pennsylvania Engineering Corporation, New Castle, Pa., a corporation of Pennsylvania

Filed May 27, 1969, Ser. No. 828,123
Int. Cl. C21c 5/46
U.S. Cl. 266—36 11 Claims



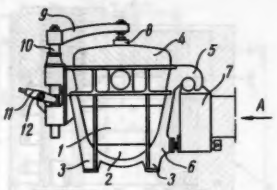
Expansion and contraction permitting bracket and keeper assemblies are provided between a trunnion ring and the metal outer shell wall of a molten material handling or processing vessel for mounting and supporting it in an upright position and during any tilting movement thereof in an improved stabilized manner. An upper group of pairs of diagonally-opposed mounting assemblies constitute the main mounting and supporting means for the vessel and an aligned lower group serve to supplement the support when the vessel is tilted from a vertical towards a horizontal position, all while permitting the vessel to expand and contract peripherally, vertically or longitudinally, laterally or transversely. Unique gib or keeper and wedge elements are employed for adjustably-connecting or adjustably-slidably-clamping the vessel on its trunnion ring.

3,561,745

TUNDISH FOR CONTINUOUS CASTING MACHINES

Leonid Alexandrovich Bykov, Ulitsa Mashinostroitelei, 59 kv. 30; Albert Grigorievich Ksenofontov, Ulitsa Krasnykh Bortsor, 7, kv. 16, and Adolf Petrovich Kolomeitsev, Ulitsa Ilicha, 4, kv. 2, Sverdlovsk, U.S.S.R.

Filed Apr. 30, 1968, Ser. No. 725,411
Int. Cl. C21b 7/14
U.S. Cl. 266—38 5 Claims



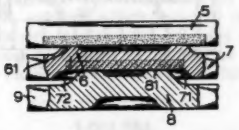
A continuous metal casting tundish which is easily replaceable over the mold and insures convenient servicing in situ. The tundish comprises a shell for containing the molten metal, at least one cover over the shell, stopper means for selectively controlling the rate and amount of the molten metal being poured from the tundish, an upper support means and a lower support means, both the support means being on the same lateral side of the shell and coacting to support the tundish in a cantilever fashion. The stopper means includes an actuating mechanism located on the opposite lateral side of the shell from the upper and lower support means. The upper support means is a hook, the lower support means is an abutment, and the upper and lower support means coact with commensurate shaped elements on a rotating lifting table which positions the tundish over the mold.

3,561,746

LEAFSPRING

Joachim Ulbricht, Hagen, Germany, assignor to Hoesch Aktiengesellschaft, Dortmund, Germany

Filed Dec. 26, 1968, Ser. No. 787,003
Claims priority, application Germany, Jan. 31, 1968, P 16 50 971.0
Int. Cl. F16f 1/24
U.S. Cl. 267—50 10 Claims

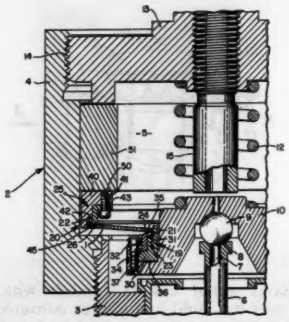


A leafspring consists of two or more elongated superimposed leaves each having a surface facing the other. The leaves each have an end portion provided with an upwardly extending projection on which the underside of the next-higher leaf slidably rests. These projections are each provided with a downward depression the open side of which faces the underside of the leaf above, and lubricating material is accommodated in this depression so as to lubricate and facilitate the sliding movements between the projection and the superimposed leaf.

3,561,747
BELLEVILLE SPRING SUPPORTS

Alfred F. Donnelly, Thousand Oaks, Calif., assignor to Pneumo Dynamics Corporation, Cleveland, Ohio, a corporation of Delaware

Filed Sept. 25, 1968, Ser. No. 762,512
Int. Cl. F16f 1/26
U.S. Cl. 267—161 9 Claims

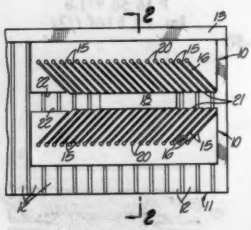


Belleville spring supports in the form of closely packed antifriction bearings contained in races having sufficient radial clearance to permit radial movement of the bearings with the I.D. and O.D. edges of the Belleville spring supported thereby as they move in and out during deflection.

3,561,748
WORKPIECE CLAMP

Corby J. Schefers, 1112 B Chestnut St., Burbank, Calif. 91502

Filed Oct. 18, 1968, Ser. No. 768,782
Int. Cl. B25b 1/00
U.S. Cl. 269—8 9 Claims

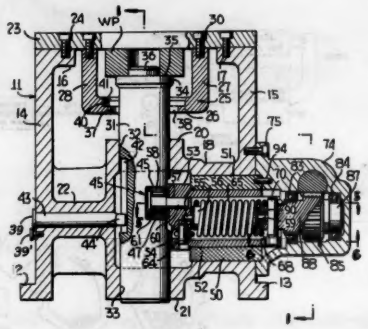


A versatile workpiece clamp having many uses with and without magnetic chucks. The clamp comprises a strip of rigid material having closely-spaced slightly-flexible fingers acutely inclined to one lateral edge with their exposed ends lying in a common plane and adapted to be held in firm contact with a workpiece backed by a suitable stop. A work force applied to the exposed surface of the workpiece and generally toward the fingers acts to flex the fingers into firmer gripping contact with the workpiece without risk of injury thereto. The clamp can be used alone or in combination with a second clamp. If made of magnetic material the clamp can be used with a magnetic chuck and employed to clamp workpieces made of a wide variety of nonmagnetic materials.

3,561,749
TORSION SPRING CLAMPING MECHANISM

Robert R. Grover, Westport, N.H., assignor to Kingsbury Machine Tool Corporation, Keene, N.H., a corporation of Delaware

Filed Feb. 28, 1967, Ser. No. 619,265
Int. Cl. B25b 1/20, 1/06
U.S. Cl. 269—224 22 Claims

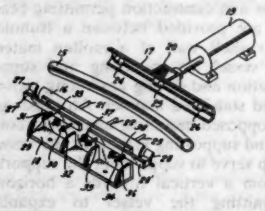


This disclosure relates to a unitary form of torsion spring clamping mechanism including a vertically reciprocable ram which is movable through a hole in the bottom of a workpiece-holding-nest for engaging against an undersurface of a workpiece and raising the workpiece to contact the undersurface of a clamp plate, then to apply a clamping pressure to the workpiece, against the clamp plate. The ram is vertically driven in guides by a crank connected to a rotatable sleeve, and indirectly, to one end of a torsion spring. The other end of the torsion spring is connected to a rack-and-pinion driving means which is operable upon receiving a motive driving force. Upon movement of the rack and rotation of the pinion, the crank is rotated through the torsion spring which is operative as a coupling, to raise the ram to a clamping point spaced from the clamp plate with the workpiece therebetween. Continued rotation of the pinion gear tensions the torsion spring, relatively displacing the ends of the spring. This allows the pinion gear to always be rotated through an arc of 180°, but the crank which raises the ram will not always be rotated through 180°, depending upon the allowable tolerance variation in the thickness of the workpieces. At the removal of a motive force, the ram will be retained in position, clampingly engaging an associated workpiece under a force applied by tensioning the spring, due to a self-locking feature utilizing friction forces between relatively movable parts.

3,561,750
HOSE STRAIGHTENING FIXTURE

Howard L. Woodrum, Stillwater, Okla., assignor to Amerace Esna Corporation, New York, N.Y., a corporation of Delaware

Filed Sept. 25, 1968, Ser. No. 762,417
Int. Cl. B25b 1/24
U.S. Cl. 269—269 4 Claims



A fixture for holding curved rubber hose in a substantially straight condition comprising two arcuate members which

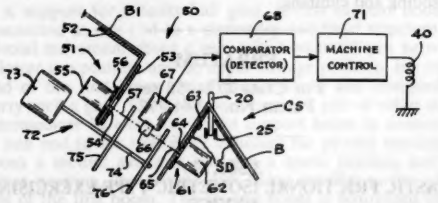
are movable toward and away from one another with one of the members having surface interrupting knobs which press against the hose outside curvature to reduce the distance to the same as the inside curvature.

3,561,751
MECHANISM FOR UNFOLDING SIGNATURES
Lyle V. Dutro, 1660 Carriage House Road, Pasadena, Calif.
Filed July 31, 1968, Ser. No. 749,054
Int. Cl. B65h *5/30*
U.S. Cl. 270—55 **9 Claims**

This invention includes a mechanism for unfolding signatures so that inserts can be put in the central fold. The signature, of which an example is a tabloid, comprises a plurality of folded, substantially identically-sized flat sheets of paper, each folded sheet being inserted within the fold of its next contiguous sheet so that a common center fold for the signature is formed with the successsive sheets formed as embracing layers. Each successive outer layer is underlapped at its free edges relative to the free edges of the layer next innermost to it, by which means a tapered free edge is formed. The means comprises a supporting table, a sucker wheel with an axis of rotation, and a perforated peripheral surface with a peripheral tangential speed equal to the forward speed of the signature so as periodically to engage the uppermost portion of a folded structure. A transfer means moves the folded structure along the supporting table in a path parallel to the center fold at said forward speed. A source of subatmospheric pneumatic (suction) pressure is periodically connected to the perforated peripheral surface by timer means. A shelf overlays at least a part of the supporting table and receives the free edge which is lifted by the sucker wheel.

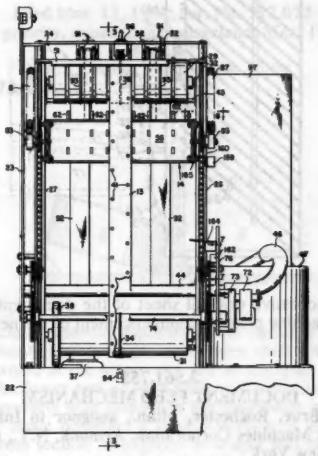
According to a preferred feature of the invention, the sucker wheel is driven by a motor, and the timer means connects the peripheral surface to subatmospheric pressure with a frequency less than the frequency of revolution of the sucker wheel.

3,561,752
SIGNATURE MACHINES
William B. McCain, Hinsdale, and James F. Cosgrove, Western Springs, Ill., assignors to Chicago Machinery Laboratory, Inc., Chicago, Ill., a corporation of Illinois
Filed July 29, 1968, Ser. No. 748,380
Int. Cl. B65h *43/02*
U.S. Cl. 270—56 **17 Claims**



A caliper system for a cyclically operable signature gathering machine in which each unbound book of signatures is probed with a beta particle beam or other beam and the energy level of the emergent beam is compared with a reference to control machine operation and prevent binding of incorrectly assembled books.

3,561,753
SHEET COLLATING DEVICE
Donald L. Snellman, Seattle, Wash., assignor to Norfin, Inc., Seattle, Wash., a corporation of Washington
Filed July 29, 1968, Ser. No. 748,306
Int. Cl. B65h *39/02*
U.S. Cl. 270—58 **8 Claims**

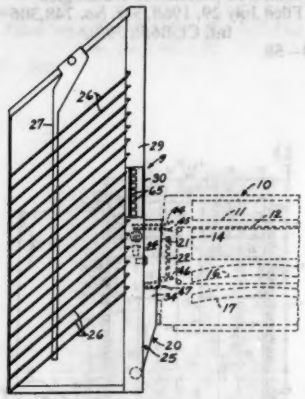


A sheet collating device having a collator distributor for receiving sheets and distributing the sheets at preselected vertical positions for reception by a vertical column of bins. The sheet distributor has a perforated tape conveyor system with a vertical course located in front of the column of bins. The conveyor tape passes over a vacuum plenum which serves to hold the sheets to the moving tape until they are deflected. A deflector mechanism is mounted for vertical travel up and down the vertical course of the conveyor with its position being controlled by an electrical control system so as to cycle through a set of preselected vertically spaced positions. Extensible tape members are connected at one end to the deflector so as to move therewith and to overly the moving sheet to aid in retaining the sheet against the conveyor. Stationary vertical backup means are provided in back of the sheet which cooperate with the extensible tapes in maintaining the sheet properly disposed until it reaches the position of deflection. The device may also include bypass conveyor means for moving sheets onto an adjacent collating device placed in tandem. The bin assembly is carried by the same frame and cabinet which mounts the distributor mechanism and is mounted so as to be easily removed from the cabinet. Access is afforded to the shelves from one side of the cabinet to facilitate removal of the collated sheets.

3,561,754
SHEET COLLATION DISTRIBUTOR
Bernard W. Gaffron, New Brighton; Logan D. Gilman, St. Paul, and Leo J. Schulz, Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn., a corporation of Delaware
Continuation-in-part of application Ser. No. 756,992, Sept. 3, 1968. This application Aug. 11, 1969, Ser. No. 849,129
Int. Cl. B65h *39/02*
U.S. Cl. 270—58 **11 Claims**

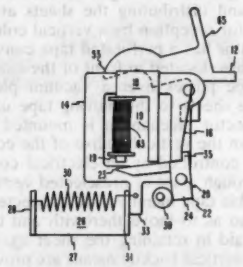
A collation distributor for use with a document copying machine which distributor is adapted to receive and collate the copies of the document made by the machine and receive the original sheets of the document. The distributor comprises a plurality of trays for receiving the copies, means for directing the copies of each original sheet seriatim into the

trays, and control means for resetting the sheet-directing means with relation to the trays in response to the discharge



of each successive original sheet of the document from the copying machine prior to commencement of the next run.

3,561,755
DOCUMENT FEED MECHANISM
Boyd M. Brue, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y., a corporation of New York
Filed Oct. 25, 1968, Ser. No. 770,505
Int. Cl. B65h *3/06, 7/18*
U.S. Cl. 271—41 **3 Claims**



The invention pertains to a document feeding mechanism for selectively lowering a document deck to engage a feed roll to effect sequential feeding of documents from the hopper. The document supporting bed is controlled by a cam driven articulated pivot latch which is magnetically actuated to cause the articulated portions to be locked to one another for pivoting as a unitary structure.

3,561,756
CARD HANDLING SYSTEM
David L. Barnett, Phoenix, Ariz., assignor to Data Computing Corporation, a corporation of Arizona
Filed Mar. 21, 1969, Ser. No. 809,168
Int. Cl. B65h *3/56*
U.S. Cl. 271—41 **10 Claims**

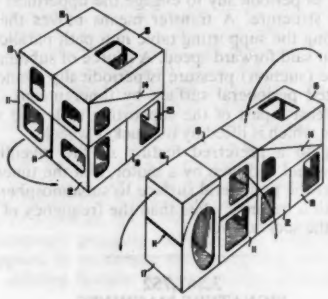
Apparatus including a feed bin attached to a frame for supporting cards in parallel planes slightly inclined from vertical. A picker knife extends into the feed bin and periodically elevates the first card in the bin into a feed position. A feed plate mounted for rotation in a plane substantially parallel to the plane of the card in feed position is provided with a plurality of card-engaging protrusions which contact the edge of the card in the feed position and move the card in its plane past read heads. The picker knife elevates the card in synchronism with the rotation of the feed plate through the utilization of camming pins secured to the feed plate which

contact the bottom of the picker knife to cause the latter to extend into the feed bin.

ERRATUM

For Class 271—60 see:
Patent No. 3,561,771

3,561,757
HINGED MODULAR PLAYGROUND BLOCK SYSTEM
William C. Schillig, 2801 N. Dinwiddie St., Arlington, Va.
Filed Mar. 17, 1969, Ser. No. 807,789
Int. Cl. A63b *17/00*; A63h *33/04*
U.S. Cl. 272—60 **6 Claims**



A modular playground block system including a plurality of hollow block modules, each of which is hingedly connected to one other module, some of the hinges being vertically oriented and others horizontally disposed. Through passageways or ports connect from adjacent modules and at least two of the modules together forming an inclined plane for sliding and climbing.

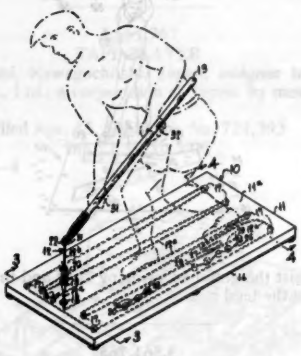
ERRATUM

For Class 272—58 see:
Patent No. 3,561,772

3,561,758
ELASTIC FRICTIONAL ISOMETRIC TYPE EXERCISING DEVICE
Laurence J Huber, 410 Hamilton St., Harrison, N.J. 07029
Filed Nov. 19, 1968, Ser. No. 776,865
Int. Cl. A63b *21/04*
U.S. Cl. 272—82 **3 Claims**

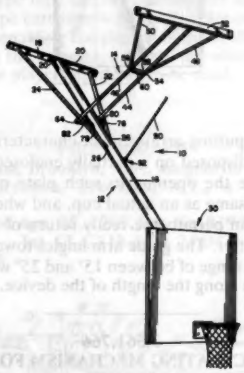
An exercising apparatus in which a handle is connected at one end of a flexible elastic strand such as nylon, the opposite end portion of the strand being supported by a base

having spaced stationary abutments thereon adapted to be frictionally engaged by the strand when tensile stress is applied to the latter through the handle. The apparatus is



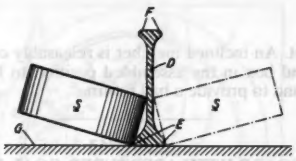
further characterized by a frictionally engaged second strand for damping the return of the first strand from its stressed elongated position to its initial unstressed contracted position.

3,561,759
FORWARD FOLDING BASKETBALL BACKSTOP
Joseph W Duganich, Pendleton, Ind., assignor to Institutional Equipment Corporation, Pendleton, Ind., a corporation of Indiana
Filed Aug. 5, 1968, Ser. No. 750,304
Int. Cl. A63b *63/04*
U.S. Cl. 273—1.5 **8 Claims**



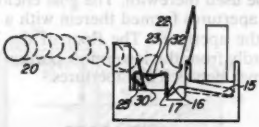
A support for a basketball goal. A first support boom is connected at one end to a stationary overhead structure for pivotal movement about a generally horizontal axis between a lower use position and an upper storage position, the other end of the first boom being proportioned and designed to carry such a goal. The first boom carries a pair of roller stops intermediate its ends. A second support boom is connected at one end to the stationary structure for pivotal movement about a second axis and between a lower position and an upper position, the second axis being parallel to the pivot axis of the first boom. The second boom is bifurcated in its distal region to straddle the first boom, and its distal extremity is closed by a transverse member constituting a second stop means which, when the second boom is in its lower position, engages that surface of the first boom which is remote from the second axis to support the first boom in its use position. A cord and pulley system is provided to lift the first boom from its use position to its storage position, and the pair of stops coact with the second boom during such movement to lift the second boom also to its storage position. There is described, therefore, a support comprising a pair of interlocking booms, both of which are foldable between a lower use position and an upper storage position.

3,561,760
HOCKEY STICK WITH FLARED UPPER AND LOWER PORTIONS
Hans Klay, Handbuehlstrasse 10, 4900 Langenthal, Switzerland
Filed Mar. 11, 1968, Ser. No. 712,072
Claims priority, application Switzerland, Mar. 17, 1967, 3997/67
Int. Cl. A63b *59/12*; **B63h** *16/04*
U.S. Cl. 273—67 **3 Claims**



An article of sporting equipment, for instance a conventional ice hockey stick which comprises a shaft with a handle portion formed at the upper end and an elongate blade provided at the lower end of such shaft and extending substantially transversely with respect to the lengthwise axis of such shaft. The blade possesses a central portion of substantially uniform cross section throughout its length and incorporates substantially vertical, parallel sidewalls. Additionally, there are provided outwardly flared portions at the upper and lower extents of the central blade portion, these flared portions extending substantially linearly the full length of the blade, and such flared portions being symmetrically formed on both sides of the blade.

3,561,761
TARGETS ACTUATED UPON IMPACT BY A MISSILE
Asle Klemma, Roselle, Ill., assignor to Richard R. Mybeck, Oak Park, Ill., fractional part interest to each
Filed Apr. 22, 1969, Ser. No. 818,254
Int. Cl. F41j *7/00*
U.S. Cl. 273—102.1 **12 Claims**

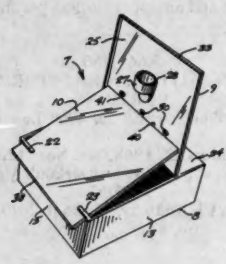


An amusement device having a plurality of individually actuatable targets, each operatively associated with a launching device which, in response to the impact of a missile upon its associated target, is actuated to fire a retaliatory shot in the direction from whence the missile came. The device is further capable to initiate return fire of either single shot or volley, depending upon which target is struck.

3,561,762
PORTABLE BASKETBALL APPARATUS WITH BALL RETURN
Merle P. Russell, Rte. 3, Rensselaer, Ind. 47978
Filed July 7, 1969, Ser. No. 839,176
Int. Cl. A63b *63/04*
U.S. Cl. 273—103 **10 Claims**

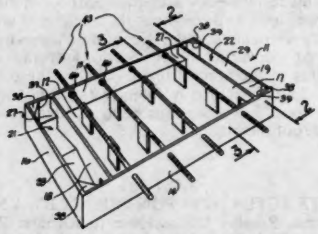
A portable amusement device having a small basket mounted on the underside of the lid of a box so that when

the lid is secured in a vertical position a ball can be thrown toward the lid with the object being for the ball to go through



the basket. An inclined member is releasably connected with the lid and box in the assembled position to hold the lid in position and to provide a ball return.

3,561,763
GAME BOARD WITH APERTURED GOAL ENCLOSURE
Floyd F. Mellen, Jr., 8417 Pacific St., Omaha, Nebr. 68124
Filed Oct. 3, 1968, Ser. No. 764,876
Int. Cl. A63d *3/02*
U.S. Cl. 273—119 **8 Claims**



This invention relates to a game board comprising a playing deck with at least one ball receiving and rejecting goal enclosure disposed thereon and ball impelling members adapted to be used therewith. The goal enclosures each have at least two apertures formed therein with a ball passageway connecting the apertures. The floor of the ball passageway slopes upwardly from the lowermost portion of the apertures to form an apex between the apertures.

ERRATUM

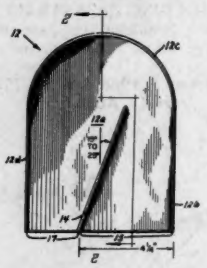
For Class 273—130 see:
Patent No. 3,561,774

3,561,764
GOLF SWING CORRECTIVE MAT
Richard A. Thomas, Tallahassee, Fla. (11302 S. W. 104th Ave., Miami, Fla. 33156)
Filed Oct. 3, 1968, Ser. No. 764,691
Int. Cl. A63b *69/36*
U.S. Cl. 273—183 **7 Claims**

A panel structure for positioning on the ground in a golf tee area and defining a pair of generally straight visually ascertainable paths inclined approximately 25 to 30° relative to each other and intersecting at one pair of corresponding ends, the panel structure being operative, when a ball is teed up on a first of the paths at a point spaced therealong from the intersecting ends of the paths and the nonintersecting end portion of the first path extends in the intended tee shot direction, to provide a visual guide defined by the second

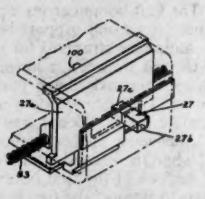
path to assist the golfer in swinging "out and through" when swinging at the teed ball.

3,561,765
PRACTICE PUTTING DEVICE
Larry D. Dixon, 1729 S. Grand Ave., Evansville, Ind., and Willaim Virgil Johnson, Vanderburgh County, Ind. (R.R. 4, Box 411, Mesher Park Drive, Evansville, Ind. 47712)
Filed Apr. 8, 1968, Ser. No. 719,329
Int. Cl. A63b *57/00*
U.S. Cl. 273—177 **1 Claim**



A simulated putting arrangement characterized by a guide arm angularly disposed on a partially enclosed inclined plate member, where the opening to such plate member for the golf ball is the same as an actual cup, and where the position of the guide arm permits the ready return of the golf ball to the practice putter. The guide arm angles towards one side of the device in a range of between 15° and 25° with reference to a vertical plane along the length of the device.

3,561,766
SWITCH ACTUATING MECHANISM FOR RECORD PLAYER
Jack L. Kelly, Bethel Park, Pa., and Ronald K. Wiandt, Decatur, Ill., assignors to General Electric Company, a corporation of New York
Filed Jan. 6, 1969, Ser. No. 789,173
Int. Cl. G11b *17/00*
U.S. Cl. 274—1 **4 Claims**



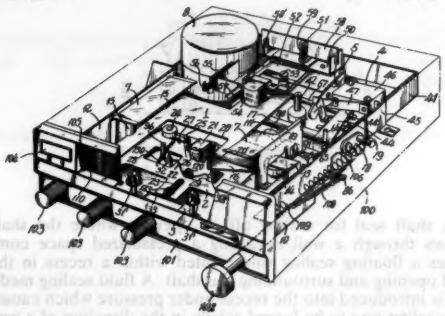
In a miniature record player for reproducing diminutive records, there is provided a multifunctional slidable actuator

which is manually operable to select "on," "off," "reject," or "repeat" play. Characterized by simplicity, this actuator is only a single part which is controlled by a single spring that is loaded in two directions.

3,561,767
TAPE PLAYER

Tokuji Negishi, Kawaguchi-shi, Japan, assignor to Teikoku Dempa Co., Ltd., a corporation of Japan. by mesne assignment

Filed Apr. 15, 1968, Ser. No. 721,393
Int. Cl. G11b *5/00*
U.S. Cl. 274—4 **12 Claims**

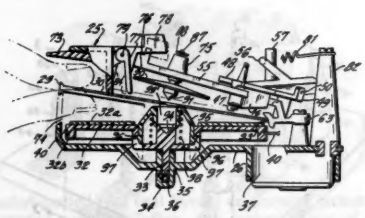


The present invention is an improvement in tape recorders, and provides a new mounting mechanism in the tape player onto which a two reel type tape cartridge is mounted including an elevator for moving said two reel-type tape cartridge in its width direction, as well as a sliding table on this elevator, and at the same time permits interchangeability between said two reel-type tape cartridge and either or both of a single reel-type tape cartridge with pinch roller or without pinch roller, thereby enabling the playing of many different types of cartridges with the same tape player for which in the past a plurality of tape players have had to be used.

3,561,768
PHONOGRAPH

John F. Castagna, Brooklyn, N.Y., assignor to Castagna Electronics Corporation, Brooklyn, N.Y., a corporation of Delaware

Filed Apr. 28, 1969, Ser. No. 819,834
Int. Cl. G11b *3/00, 25/04*
U.S. Cl. 274—9 **13 Claims**

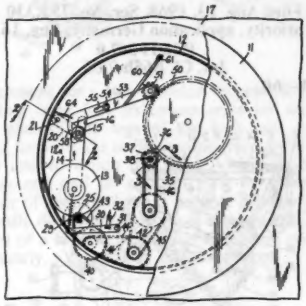


A phonograph for playing thin flexible vinyl disc records is provided with means for automatically lifting the record from the turntable so that it may be readily grasped for manual removal. Cooperating with the record-lifting means is a spindle for centering the record on the turntable and a flange associated with the spindle for clamping the record against the turntable during rotation of the latter. The centering spindle and clamping means are mounted to a hinged platform which also carries the tone arm. When the hinged platform is raised, the tone arm is operated to a position where the stylus is aligned with the record lead-in groove and upon subsequent lowering of the hinged platform a switch is automatically operated to energize the electrical circuits for rotating the turntable and operating the amplifier. When the stylus is in the record lead-out groove, an extension of the tone arm operates a switch to deenergize the motor and amplifier.

3,561,769
RECORD PLAYERS

Robert H. Boynton, 6 Westland Ave., Milford, Conn. 06460, and James S. Boynton, 559 Pepper St., Monroe, Conn. 06468

Continuation-in-part of application Ser. No. 524,888, Feb. 3, 1966, now abandoned. This application May 8, 1968, Ser. No. 727,528
Int. Cl. G11b *19/22*
U.S. Cl. 274—9 **4 Claims**

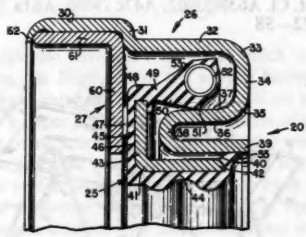


A mechanism for use in conjunction with automatic record changers, in order to momentarily stop a turntable while the record changer is permitting a record to fall onto the turntable. The mechanism includes a braking device for stopping the turntable and a device for preventing the drive system from moving the turntable.

3,561,770
SHAFT SEAL

George L. Corsi, Southfield; Mario Zelaya, Royal Oak, and Stanley N. Smith, Farmington, Mich., assignors to Federal-Mogul Corporation, Southfield, Mich., a corporation of Michigan

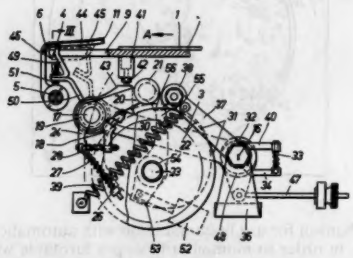
Filed Oct. 7, 1968, Ser. No. 765,315
Int. Cl. F16j *15/32;, 15/02*
U.S. Cl. 277—35 **10 Claims**



A unitized seal for sealing between a stationary shaft and the bore of a rotating housing. The shaft-supported annular oil-sealing element has a metal reinforcing member with an inner cylindrical reinforcing portion and a radially outwardly extending radial flange; an elastomeric element molded and bonded to the reinforcing element has an inner peripheral portion for snug engagement of the stationary shaft, a dirt-excluding lip extending radially outwardly from the free edge of the cylindrical reinforcing portion, a radially outwardly extending portion on the axially outer surface of the radial flange and extending axially outwardly thereof, and a main oil-sealing element lying mostly radially outwardly beyond the radial flange and axially back in the direction of the

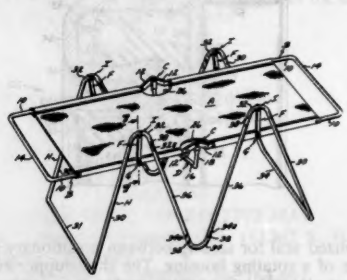
cylindrical portion and having a lip body with a lip member on the radially inward side thereof. A wear sleeve member has an outermost cylindrical portion adapted to fit in and rotate with the bore; a radial portion leads radially inwardly to a cylindrical wear sleeve portion in engagement with the main oil sealing lip, and a recurved portion leads radially in from there to an innermost cylindrical portion in engagement with the dirt-excluding lip. A unitizing member has a cylindrical portion fitting held snugly inside the outermost cylindrical portion and a radial flange leading radially inwardly.

3,561,771
DEVICE FOR THE ALIGNMENT OF A SHEET
Werner Koch, Gotzenhain Uber Langen, Germany, assignor to Roland Offsetmaschinenfabrick Faber & Schleicher A.G., Offenbach am Main, Germany, a corporation of Germany
Filed Aug. 13, 1968, Ser. No. 752,330
Claims priority, application Germany, Aug. 16, 1967, P 16 11 367.0
Int. Cl. B65h *9/06*
U.S. Cl. 271—60 **12 Claims**



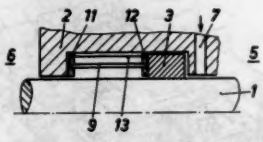
A control device for alignment marks controlling the feed of sheets in a sheet processing machine comprises means for producing movement of the marks in two parts which are independently controllable. A drive shaft supports two control cams, one of which oscillates a shaft lying parallel to the sheets on a feed table, the shaft mounting a lever which carries a second shaft oscillatable by the second cam. The marks are attached to the second shaft.

3,561,772
RECLINING EXERCISING DEVICE
Joan Curtess, La Mesa, Calif., assignor to Embro Co., Inc.
Filed Sept. 24, 1968, Ser. No. 762,113
Int. Cl. A63b *23/02*; **A47c** *19/06*; **A61a** *7/06*
U.S. Cl. 272—58 **7 Claims**



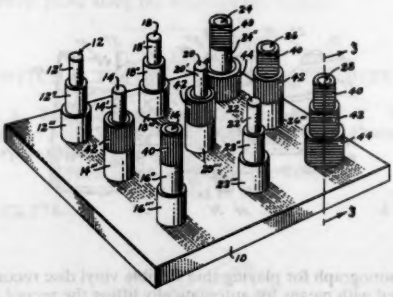
An elongate flexible panel on which a user rests, which is supported within the confines of two U-shaped tubular pivotally connected frames. The frames in turn are pivotally supported by a number of upwardly extending links connected to the centers of the upper apexes of M-shaped transversely connected side pieces that may be collapsed at will from this expanded first position to a contracted second position for storage. When the side pieces are in a first expanded position the user may pivot the frames angularly relative to one another and at least partially by the weight of his body to make active exercise simple and easy, and in so doing, stretch and strengthen the body muscles. The panel is of zippered structure and is removably secured to the side pieces of the frames.

3,561,773
FLOATING-RING SHAFT SEAL
Hans Baumann, Hombergsteig 15, Nussbaumen, and Heinrich Lorenzen, Auguartenstrasse 221, Ennetturgi, Switzerland
Filed Jan. 15, 1969, Ser. No. 791,449
Claims priority, application Switzerland, Jan. 25, 1968, 1190/68
Int. Cl. B65d *53/00*
U.S. Cl. 277—71 **4 Claims**



A shaft seal for sealing off an opening where the shaft passes through a wall enclosing a pressurized space comprises a floating sealing ring located within a recess in the wall opening and surrounding the shaft. A fluid sealing medium is introduced into the recess under pressure which causes the sealing ring to be forced axially in the direction of a wall surface within the recess, and a supporting member, for example, in the form of an assembly of axially extending rods surrounds the shaft intermediate the sealing ring and the wall surface to take up the force applied against the sealing ring by the pressurized sealing medium. The axially extending rods are stiff in an axial direction but flexible in a radial direction so as to allow the ends thereof in contact with the sealing ring to shift radially and accommodate themselves to radial shifts of the sealing ring. A cylindrical liner can be installed around the rod assembly to seal it off from pressures which would otherwise be exerted directly against it by the pressurized sealing medium.

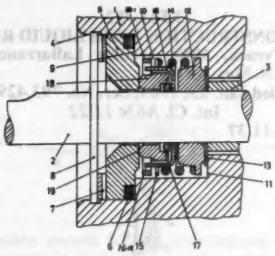
3,561,774
THREE-DIMENSIONAL GAME
Lester C. Brinser, 1730 Briggs Chaney Road, Silver Spring, Md. 20904
Filed May 15, 1968, Ser. No. 729,202
Int. Cl. A63f *3/00*
U.S. Cl. 273—130 **6 Claims**



A base means has a plurality of spaced support members extending upwardly therefrom. Each of these support members includes a plurality of shoulders extending therearound. A plurality of tubular playing pieces are provided which are adapted to fit within one another and to fit over the support members to be supported on said shoulders at different vertical levels so that a plurality of playing pieces of one player

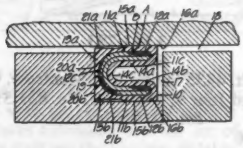
may be aligned in lines extending horizontally, vertically or diagonally through the playing pieces when supported in playing position relative to said support members.

3,561,775
SEALING DEVICE COMPRISING AN O-RING
Leif V. Sturlason, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark, a company of Denmark
Filed May 17, 1968, Ser. No. 729,984
Claims priority, application Germany, May 18, 1967, D53111
Int. Cl. F16j 15/38
U.S. Cl. 277—87 6 Claims



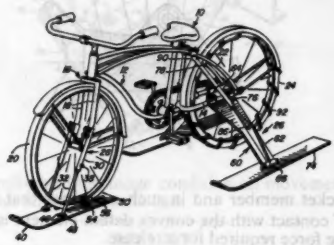
A sealing device comprises a component encircling a shaft with the component having a steeped circular groove coaxial with the shaft. The deeper portion of the groove is closer to the surface of the shaft than the shallower portion and the edge of the step defining the two portions is located at a distance from the surface of the shaft that is greater than the radius but smaller than the diameter of an O-ring received in the groove. Means are provided for loading the O-ring against the edge of the step and roll into the deeper portion of the groove thus effecting a seal between the component and the shaft.

3,561,776
COMPOSITE RING SEAL AND METHOD OF MAKING
John D. Wilson, Pacific Palisades, Calif., assignor to The Fluorocarbon Company, Anaheim, Calif., a corporation of California
Filed Nov. 20, 1968, Ser. No. 777,227
Int. Cl. F16j 15/32
U.S. Cl. 277—206 23 Claims



A radial loaded ring seal having an annular jacket of suitable material such as Teflon, the jacket being of channel-shaped cross section surrounding a loading spring of channel-shaped cross section, the loading spring being fabricated from a spring strip of suitable material such as stainless steel by being helically wound into a tube in which the edge margins of the successive convolutions are in overlapping relation, the tube then being formed into a ring and deformed under suitable pressure means in a die or by other suitable means into a generally U-shaped annular spring member having a double-walled channel with a radial side opening, after which the preformed jacket is applied to the spring to provide a composite structure in which the jacket forms a shield for the spring which in turn provides radial energizing means for the jacket.

3,561,777
BICYCLE WITH SUPPORT SKIS
Harry F. Geis, Willow Glenn Drive, Kalispell, Mont. 59901
Filed Apr. 9, 1969, Ser. No. 814,540
Int. Cl. B62k 13/00
U.S. Cl. 280—7.12 7 Claims



An attachment for a two-wheeled bicycle including a pair of upstanding front fork extension arms for securement to the lower ends of the legs of the fork and including, alternately, a forward ski or float supported from their lower ends upon and to which the front wheel of an associated bicycle may rest and be secured. The attachment also includes a pair of upstanding rear support legs for securement, in downwardly divergent relation, to the opposite sides of the rear portion of a bicycle frame and which are each provided with, alternately, a ski or float at its lower end.

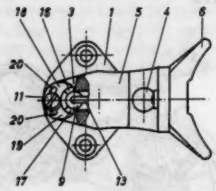
3,561,778
THREE WHEELED VEHICLE
Edward G. La Brie, 53 Chaney Ave., Tupper Lake, N.Y. 12986
Filed Mar. 6, 1968, Ser. No. 710,862
Int. Cl. B62k 21/02, 9/02
U.S. Cl. 280—7.14 1 Claim

A novel tricycle having a rear wheel which is pedal and chain driven, the front end of the vehicle having a pair of parallel forks to carry the front wheels which are steerable by a handlebar's upper portion. The front wheels of this tricycle are of such construction as to allow the rider when stopped to maintain balance without removing his feet from the pedals. This vehicle also allows the rider to bank into a turn and provide maximum safety for the rider at higher speeds which cannot be attained with the conventional tricycle-type of vehicle.

3,561,779
HEEL- OR TOE-HOLDING APPLIANCE FOR SAFETY SKI BINDINGS
Otto Huss, No. 26, Wallgau, Germany
Filed Sept. 6, 1968, Ser. No. 758,054
Claims priority, application Germany, Sept. 14, 1967, P 15 78 856.4
Int. Cl. A63c 9/08
U.S. Cl. 280—11.35 9 Claims

A soleholder carrier is pivoted to a mounting, e.g., the baseplate, on an axis which is vertical or transverse to the ski. The soleholder carrier is also connected to the mounting by a

detent device, which is automatically releasable in response to an overload. The concave detent socket member is adjustably mounted on that part of the appliance which carries



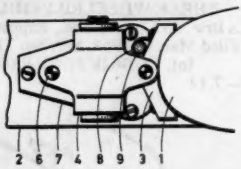
said socket member and in such a manner that its angle or area of contact with the convex detent element is variable to vary the force required for a release.

3,561,780

SAFETY SKI BOOT FRONT BINDING

Georges P. J. Salomon, 34 de Loverchy Avenue, Annecy, Haute-Savoie, France

Filed Jan. 6, 1969, Ser. No. 789,157
Claims priority, application France, Jan. 10, 1968, 135563
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 **8 Claims**



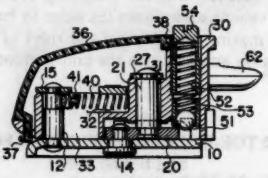
A ski boot front binding which can be opened to release the ski boot by means of a ski pole acting as a lever and which produces forces substantially equal to the forces necessary for the safety release of the binding.

3,561,781

SAFETY SKI BOOT TOE FIXTURE

Noriyasu Hashioka, and Kesao Shinohara, Tokyo, Japan, assignors to Hope Kabushiki Kaisha, Tokyo, Japan, a corporate body of Japan

Filed July 15, 1969, Ser. No. 841,784
Claims priority, application Japan, July 31, 1968, 43-66111;43 66112;43-66113;43-66114;43-66115
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 **6 Claims**



A safety ski boot toe fixture comprises a base, a turning member, a toe-fitting member and a spring or other means for pressing the turning member to the base under compression. The turning member, such as a disc, has a semicircular hole, a circumferential projection comprising steep slopes at both sides of the semicircular hole and flat portions in succession with the steep slopes. A vertical pin is fixed at the center portion of the turning disc which is turnably fixed to the base and is connected to the toe-fitting member by the vertical pin. The toe-fitting member, having a deep slot at its fore portion, is positioned on a second vertical pin provided at the fore portion of the base. A first spring is provided under compression between the two vertical pins. A ball above the semicircular hole is held under compression and will never be displaced up to the flat portion of the circumferential projections unless unreasonable side force is applied to the toe, while the ball once coming to the flat portion, will easily be displaced to disengage the toe. In the disengaging position the first spring contributes to turn back the toe-fitting member to the toe engaging position by its increased pressure.

3,561,782

SKI POLE CONSTRUCTION WITH LIQUID RESERVOIR

Donald P. Tyrack, 5840 Avenida LaBarrance NW., Albuquerque, N. Mex. 87100

Filed Jan. 23, 1969, Ser. No. 793,429
Int. Cl. A63c *11/22*
U.S. Cl. 280—11.37 **7 Claims**

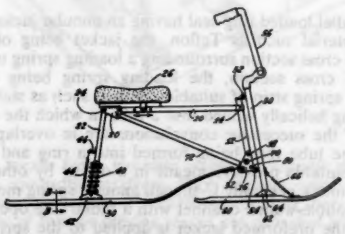
A ski pole having an upper hollow end providing a liquid container. The contoured handgrip is readily applicable and removable, and is provided with a latch-controlled locking device. The handgrip when removed permits partial withdrawal of a flask for drinking use. In addition, the locking device functions as a safety release if the basket at the pointed lower end of the ski pole should become snagged on a tree, a bush or other obstruction.

3,561,783

SKI BIKE

Richard H. Ellett, 4435 Sunset Ave, Montrose, Calif. 91020

Filed June 9, 1969, Ser. No. 831,517
Int. Cl. B62b *13/04*
U.S. Cl. 280—16 **9 Claims**



An improved collapsible ski bike is provided for gliding down snow covered slopes. The ski bike of the invention in-

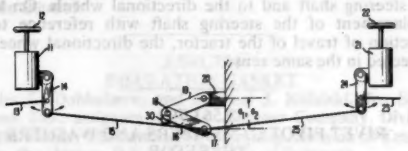
cludes a frame supported on a rear ski by means of a shock absorber, a seat mounted on the frame, and turnable steering means including handle bars attached to the frame and supported on a forward ski.

3,561,784

TRANSMISSION FOR TRANSMITTING A MOVEMENT

Manfred Bantle, Esslingen-Hegensberg, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Mar. 6, 1968, Ser. No. 710,812
Claims priority, application Germany, Mar. 7, 1967, D52453
Int. Cl. B62d *7/00*
U.S. Cl. 280—91 **14 Claims**



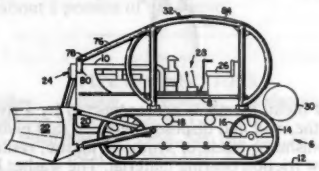
A transmission system for the transmission of movement from one movement system to another movement system with a device for controlling and possibly effectively disconnecting the transmission of movement, in particular for crank gears and the steering system of several pairs of wheels in motor vehicles, in which a linkage is provided between a lever arm of one movement system and between a lever arm of the other movement system; the linkage includes an intermediate lever system having adjustable lever arm lengths at least for the partial linkage connected with the lever arm of one movement system, but preferably providing adjustable lever arm lengths for both partial linkages.

3,561,785

PROTECTIVE COVER FOR VEHICLES

Charles C. Kidder, Rte. 1 Box 735, Crannell, Calif. 95530

Filed Mar. 5, 1969, Ser. No. 804,599
Int. Cl. B62d *25/06*
U.S. Cl. 280—150 **3 Claims**



A protective cover for placement over the driver's seat of a vehicle and defined by a plurality of arcuate members secured to the vehicle. The members define oval shaped, arcuate roll surfaces extending over an arc of more than 180° so that objects striking the canopy slidably move along the roll surfaces under their own weight and off the canopy and the vehicle without contacting the operator of the vehicle.

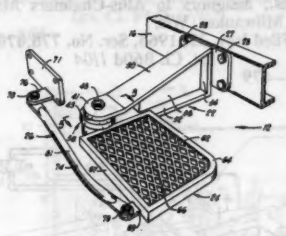
3,561,786

VEHICLE ENTRANCE STEP APPARATUS

Russell E. Lentz, 110 W. Fifth St., Hutchinson, Kans. 67501

Filed Mar. 21, 1969, Ser. No. 809,081
Int. Cl. B60r *3/02*
U.S. Cl. 280—166 **3 Claims**

This invention is an entrance step apparatus having a support assembly attachable to the frame of a vehicle; a step assembly pivotally connected to the support assembly movable from concealed to usage positions; and an actuator assembly connected to a movable door structure of the vehicle and the step assembly operable on movement of the door structure to conceal and reveal the step assembly. This invention is operable to position an entrance step structure in a nonuse condition under the vehicle body and pull the same outwardly therefrom to the usage condition on movement of an adjacent door structure or the like.

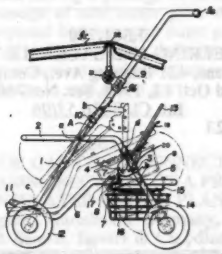


3,561,787

COLLAPSIBLE FRAME FOR A BABY CARRIAGE

Tokuzoh Toda, and Isao Niino, Tokyo, Japan, assignors to Suzuki Baby Company Limited, Tokyo, Japan

Filed Dec. 20, 1968, Ser. No. 785,550
Claims priority, application Japan, Dec. 23, 1967, 42/82316
Int. Cl. B62b *11/00*
U.S. Cl. 280—41 **6 Claims**



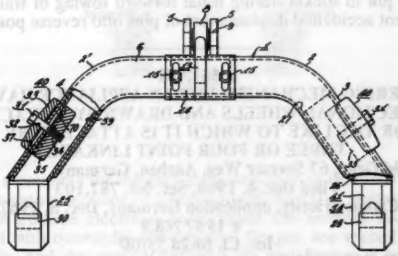
A baby carriage frame is collapsible from an open position to a closed position. The frame is formed of a forward frame section and a rearward frame section pivotally interconnected by a support section and with a hand rail section pivotally secured to the forward frame section and articulated to the rearward frame section by a connector member. The connector member includes a locking notch into which a locking member mounted on the support section is engaged in the open position. With the locking member disengaged the various frame sections pivot relative to one another into a compact arrangement.

3,561,788

HITCH ADAPTER

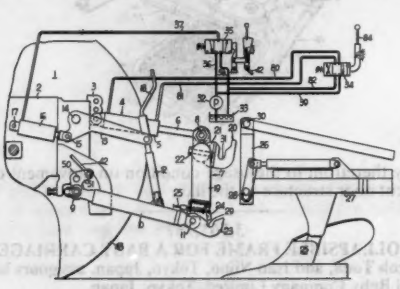
Richard G. Carlson, Greendale, and Craig W. Cannon, New Berlin, Wis., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Nov. 22, 1968, Ser. No. 778,047
Int. Cl. B60d *1/04*
U.S. Cl. 280—461 **10 Claims**



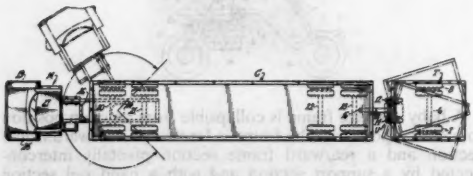
A tractor hitch adapter carried on a three-point hitch for connecting a tractor to an implement.

3,561,789
TRACTOR HITCH
Larry F. Stikeleather, Greendale, and Craig W. Cannon, New Berlin, Wis., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Nov. 22, 1968, Ser. No. 778,070
Int. Cl. B60d *1/04*
U.S. Cl. 280—479 **9 Claims**



A powerized three-point hitch carrying a hitch adapter for quick hitching to an implement. The three-point hitch is powered by any suitable means to provide horizontal and vertical movement of the hitch adapter.

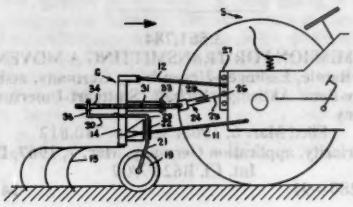
3,561,790
SELF-STEERING AND BACKABLE TRAILER
Herman E. Jurgens, 421 Banning Ave., Compton, Calif. 90222
Filed Oct. 11, 1968, Ser. No. 766,800
Int. Cl. B62d *53/06*
U.S. Cl. 280—423 **7 Claims**



A self steering and backable highway trailer consisting of two components: (1) a cargo frame with vertically hinged drawbar at one end and nonswiveling wheels at the other end, and (2) a swivel-mounted front undercarriage or dolly coupled to the frame by a pair of dependent pivot pins spaced apart along the longitudinal axis of the frame and extending through a channeled pressure disc of the dolly. The pins form alternate swivel points for the dolly, on opposite sides of the transverse axle and in each case the functioning pivot point being in the direction of travel taken by the trailer, with the other pivot pin being swingable along an arcuate slot in the disc which slot is radiused from the socketed pivot pin. The pressure disc has two such arcuate channels, each with a central recess-socket so that whichever pivot pin is lodged in a recess-socket changes with direction reversal of the trailer, thus facilitating backing. Selective lock holds forward pin in socket during usual forward towing of trailer to prevent accidental displacement of pins into reverse position.

3,561,791
STEERING MECHANISM FOR AN APPLIANCE HAVING DIRECTIONAL WHEELS AND DRAWN BY A TRACTOR OR THE LIKE TO WHICH IT IS ATTACHED BY A THREE OR FOUR POINT LINKAGE
Arnold Gego, 67 Soerser Weg, Aachen, Germany
Filed Dec. 4, 1968, Ser. No. 781,103
Claims priority, application Germany, Dec. 8, 1967, P 15 57 708.9
Int. Cl. B62d *53/00*
U.S. Cl. 280—443 **14 Claims**

Steering mechanism for a tractor-drawn appliance having directional wheels and connected to the tractor by a three- or four-point linkage. The mechanism has a steering shaft pivotally connected to the rear end of the tractor and to the appliance chassis. Steering members are connected both to



the steering shaft and to the directional wheels. On lateral displacement of the steering shaft with reference to the direction of travel of the tractor, the directional wheels are deflected in the same sense.

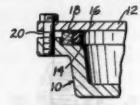
3,561,792
RIVET PIVOTED MEMBERS AND WASHERS THEREFOR
Izchak Cycowicz, Brooklyn, N.Y., assignor to Super Sagless Spring Corp., Bayonne, N.J., a corporation of New York
Filed Jan. 7, 1969, Ser. No. 789,549
Int. Cl. F16c *11/00*; **F16b** *43/00*
U.S. Cl. 287—101 **5 Claims**

A pair of metal members are connected by a rivet, with a washer on the rivet and disposed between said pivoted members. The washer is made of synthetic plastic, resilient, good wearing, low friction bearing material. The washer has an annular outer portion from which an inner thinner or finned portion projects inwardly to center the rivet, thereby providing more space for lubricating oil. The outer annular portion of the washer is cup-shaped or annularly sinuous to make the washer resilient. When used with a shouldered rivet, the centering finned portion centers on the smaller diameter portion of the rivet to prevent the rivet from becoming offset, as is the case with washers having a hole large enough to receive the large diameter part of the rivet. During the riveting process, the centering finned portion may be torn off by the shoulder of the rivet.

3,561,793
SEAL ELEMENT AND SPACER MEMBER FOR USE THEREWITH
John E. Rode, Ligonier, Pa., assignor to Temper Corporation, Ligonier, Pa., a corporation of Pennsylvania
Filed Sept. 3, 1969, Ser. No. 854,879
Int. Cl. F16l *55/00*
U.S. Cl. 285—13 **14 Claims**

The disclosure pertains to the combination of a seal element and a spacer member for being interposed between a

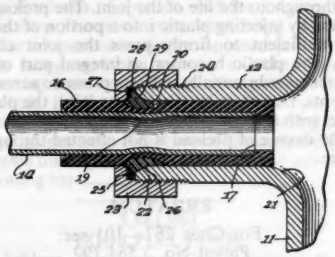
pair of parts which confine a fluid passage. The seal element sealingly engages the parts and sealing effect is enhanced by a overpressure inside the seal element. The spacer member surrounds the seal element on the outside and limits the compression of the seal element when the parts are connected together and is formed of a porous powdered metal material so as to drain off from around the outside of the seal element any fluid escaping from the inside of the seal element to the outside thereof.



3,561,794
INSULATION GASKET

Charles L. Dobbelaere, and Michael J. Rafalski, Jr., South Bend, Ind., assignors to M. B. Skinner Company, Division of the Fanner Manufacturing Company, Division of Textron Inc., Providence, R.I., a corporation of Delaware

Filed Apr. 17, 1969, Ser. No. 816,944
Int. Cl. F16l *11/12*
U.S. Cl. 285—52 **9 Claims**

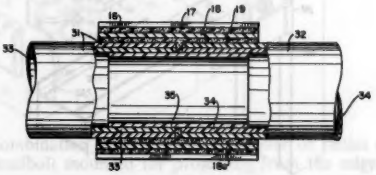


An insulation device for electrically insulating, sealing, and securing fluid conducting conduit members. The device preferably comprising a tubular sleeve and a plastic skirt disposed about a portion of the sleeve.

3,561,795
PIPE CONNECTIONS

Udo Becher, Leipzig, Germany, assignor to VEB Montagewerk Leipzig, Leipzig, Germany

Filed Apr. 15, 1968, Ser. No. 721,232
Int. Cl. F16l *13/10, 47/00*
U.S. Cl. 285—55 **5 Claims**

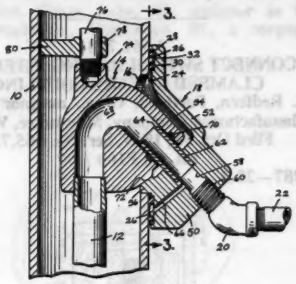


Pipe connection for joining two pipes having two concentric pairs of half shells around the joint ends of the two pipes to be connected, the inner pair being larger in diameter than the pipes and the outer pair being larger than the inner pair, with large-area bonding interstices therebetween. The gaps between half shells are angularly staggered between the inner and outer pairs. Preferably the gaps are filled up with the same bonding agent used to interconnect the pipes with the pairs of half shells.

3,561,796
PITLESS WELL ADAPTER

Clifford C. Williams, 400 N. Raynor Ave., Joliet, Ill. 60435

Filed Dec. 31, 1968, Ser. No. 788,203
Int. Cl. F16l *17/02*
U.S. Cl. 285—106 **10 Claims**

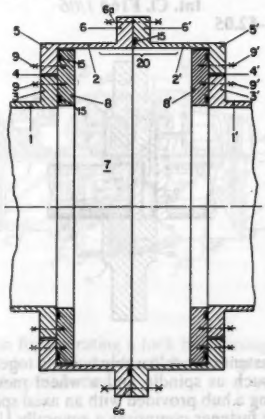


A pitless well adapter having an outer adapter part anchored to a well casing around an opening and having a discharge passage therethrough, and an inner adapter part within the well casing supported by and interconnected with said outer part and having a passage in communication with the discharge passage of said outer part. A pair of spaced gasket rings interposed between said outer part and said well casing around said casing opening define an endless spaced passage which communicates with a passage branching from the discharge passage in said outlet part.

3,561,797
COUPLING FOR GAS-TIGHT CONNECTION OF TWO TUBULAR CASING SECTIONS OF A PRESSURE GAS INSULATED SWITCH PLANT

Karl-Heinz Wagner, Mannheim, Germany, assignor to Aktiengesellschaft Brown, Boveri & Cie., Baden, Switzerland, a joint stock company

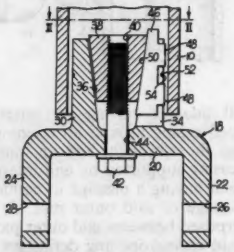
Filed Apr. 8, 1969, Ser. No. 814,255
Claims priority, application Germany, Apr. 18, 1968, 1,750,285
Int. Cl. F16l *17/00*
U.S. Cl. 285—368 **7 Claims**



In a coupling for the gastight connection of two coaxial tubular casing sections of a pressure gas insulated switch plant which enclose electrical components the sections are provided with outwardly directed end flanges, are spaced apart axially, and the spacing between the end flanges is bridged over by two tubular coupling parts which have outwardly directed, bolted together flanges meeting in a sealed joint

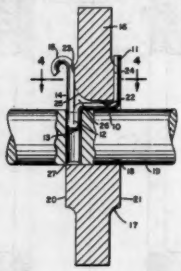
and inwardly directed flanges in alignment with the end flanges on the tubular casing sections so as to form circular joints between the confronting end faces of the outwardly and inwardly directed flanges. The inwardly directed flanges on the coupling parts are secured to the outwardly directed flanges on the tubular casing sections by means of a series of bolts and a flange ring and which also provides a seal structure for the circular joint.

3,561,798
DISCONNECT SWITCH HAVING INTERNALLY CLAMPED ROTARY COUPLING
Calvin E. Redfern, Portland, Oreg., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Oct. 13, 1969, Ser. No. 865,758
Int. Cl. F16b *1/00*
U.S. Cl. 287—20.3 **4 Claims**



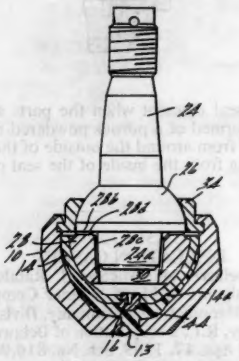
The hollow tubular rotatable control rod of an electrical disconnect switch is connected to a yoke which effects rotary movement thereof by means of a slotted hollow cylindrical member on the yoke which projects into one end of the hollow rod. Each slot is provided with a taper key located therein. A frustoconical nut is drawn up inside the member on the yoke to cause radial movement of the taper keys and a snug fit between exterior surface of the latter and the interior surface of the rod.

3,561,799
DETENT FASTENER
Francis M. Hutchinson, 141 Springer Road, Box 83, Fairfield, Conn. 06430
Filed Aug. 13, 1969, Ser. No. 849,697
Int. Cl. F16d *1/06*
U.S. Cl. 287—52.05 **12 Claims**



A detent fastener for releasably holding together two structural parts, such as spindle and a wheel member mounted thereon having a hub provided with an axial spindle-receiving opening. The fastener comprises a generally U-shaped spring wire clip for interlocking engagement in grooves provided in the axial opening and sides of the wheel hub, and includes a yieldable spring-loaded detent pin portion for releasable snap engagement in a transverse diametric hole provided in the spindle, whereby the wheel member is held against both axial and rotational movement relative to the spindle. Means is provided for manually retracting the detent pin portion from the spindle hole without the use of tools to enable removal of the wheel member from the spindle.

3,561,800
PRELOADED BALL JOINT
Morris Hassan, Trenton, Mich., assignor to Chrysler Corporation, Highland Park, Mich., a corporation of Delaware
Filed Nov. 21, 1969, Ser. No. 878,735
Int. Cl. F16c *11/06*
U.S. Cl. 287—87 **5 Claims**

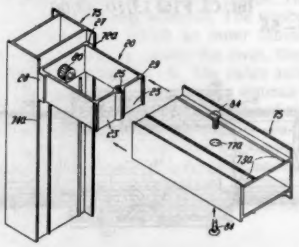


A ball joint incorporating means for insuring a proper joint preload throughout the life of the joint. The preloading is accomplished by injecting plastic into a portion of the joint at a pressure sufficient to firmly press the joint components together. The plastic becomes an integral part of the joint and distributes substantially uniform pressure across the joint components. Due to its location in the joint, the plastic is not in contact with the components of the joint which move, and hence, the degree of preload is not effected through wear of the plastic.

ERRATUM

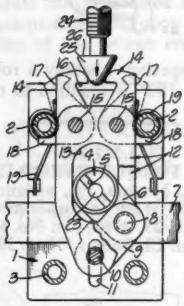
For Class 287—101 see:
Patent No. 3,561,792

3,561,801
SPRING TUBE CONNECTING MEMBER
Joseph Chak Fai Chiu, Kowloon, Hong Kong, assignor to Chiu's Joint System Limited, Tai Wai, Shatin, New Territories, Hong Kong, Japan
Filed Sept. 25, 1969, Ser. No. 861,076
Claims priority, application Great Britain, June 2, 1969, 27836/69
Int. Cl. F16b *7/18*
U.S. Cl. 287—189.36 **12 Claims**



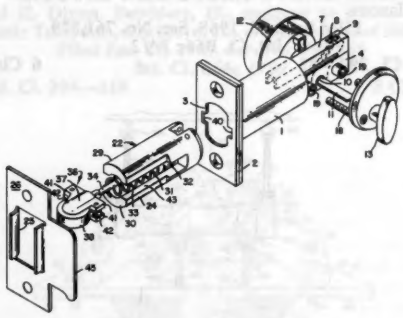
A constructional unit for connecting together hollow tubes includes a first connecting member with a base portion and an insert portion having flanged prongs, the free ends of the prongs facing each other and formed to define a threaded bore when compressed together. The second connecting member has a common base for two insert portions of the type the first connecting member has. The base portions are apertured and a three-dimensional, easily demountable and assemblable constructional system can be built up.

3,561,802
OPPOSED JAW LATCH
James E. Brockway, Venice, Calif., assignor to Hartwell Corporation, Los Angeles, Calif., a corporation of California
Filed Nov. 13, 1968, Ser. No. 775,327
Int. Cl. E05c 9/16, 19/12
U.S. Cl. 292—49 13 Claims



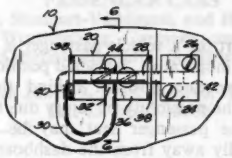
A latch having opposed and pivoted keeper jaws for engagement with a latch bolt thrust therebetween; the jaws being pivoted about separated parallel axes or a common axis by a common pair of slide plates; the slide plates, in turn, being moved by pivotally connected lever pairs one end of each being connected to a slide plate, the other being connected to a fixed axis of rotation, and the intermediate connection between the lever pairs also being joined to an operating bar connected to similar opposed jaw latches; the keeper jaw being movable between a locked position to secure a mating latch bolt, and an open position to receive the latch bolt freely, through an intermediate position wherein the keeper jaws are yieldable to spreading thrust exerted by the keeper bolt. One form of the opposed jaw latch being operable directly by rotation at the fixed axis as well as by the operating bar.

3,561,803
DOOR PULL LOCK
Ernest L. Schlage, Burlingame, Calif., assignor to Schlage Lock Company, San Francisco, Calif., a corporation of California
Filed May 12, 1967, Ser. No. 637,988
Int. Cl. E05c 1/02, 1/16
U.S. Cl. 292—15 6 Claims



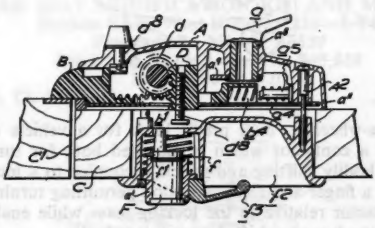
The combination of a spring-urged roller or bullet catch and a deadbolt mounted for projecting from the edge of a door along a horizontal axis centered between the vertical edges of the opening in a strike on the jamb.

3,561,804
POSITIVE HOLDING DOOR AND WINDOW LOCK
Dean R. Brown, Gages Lake, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill., a corporation of Delaware
Filed Feb. 11, 1969, Ser. No. 798,295
Int. Cl. E05c 5/04
U.S. Cl. 292—58 5 Claims



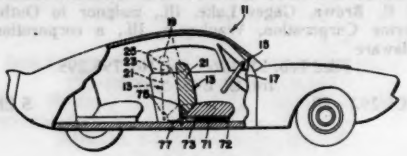
Disclosed herein is a positive holding bolt action lock having a base with a flat center portion and a pair of parallel end members and a bolt having a shank at one end which is supported by said end members for rotary and axial motion on the base and a half loop handle at the other end of the bolt encircling one of the end members and overlapping the shank.

3,561,805
DOOR LOCKS AND HANDLES THEREFOR
Albert Shaw, Bolton, England, assignor to Strebor Diecasting Company Limited, Radcliffe, England, a body corporate of Great Britain
Filed Mar. 22, 1968, Ser. No. 715,252
Claims priority, application Great Britain, Apr. 22, 1967, 18656/67
Int. Cl. E05b 55/06; E05c 1/14
U.S. Cl. 292—172 5 Claims



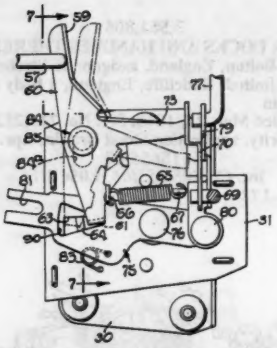
A pushbutton for operating a lock bolt through a rack and pinion to provide a movement of the bolt greater than the movement of the pushbutton.

3,561,806
VEHICLE SAFETY SYSTEM
Quong Non Tse, 2315 S. Wentworth, Chicago, Ill. 60616
Filed Sept. 19, 1968, Ser. No. 760,797
Int. Cl. B60r *21/02*
U.S. Cl. 297—216 **8 Claims**



A head support for a vehicle passenger is automatically moved from an inoperative, retracted position to an operative head supporting position behind the passenger's head to reduce the possibility of injury due to "whiplash." Additionally, the passenger seat may be automatically shifted rearwardly away from the dashboard, windshield and steering wheel conjointly with shifting of the head support into the operative head supporting position.

3,561,807
FREE-WHEELING LATCH FOR VEHICLE DOORS
Leonard K. Ploughman, Rockford, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill., a corporation of Illinois
Filed Oct. 22, 1968, Ser. No. 769,488
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **9 Claims**



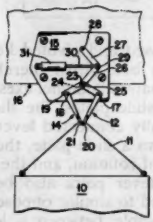
A free-wheeling, dual preset latch for a vehicle door includes a contactor which is mounted both for turning and for bodily shifting and which is coupled to a locking lever by a finger-and-slot connection permitting turning of the contactor relative to the locking lever while enabling the locking lever to shift the contactor bodily.

3,561,808
SEALING DEVICE
John H. Beier, Pleasantville, and Henry Nierhaus, Scarsdale, N.Y., assignors to Stoffel Seals Corporation, Tuckahoe, N.Y.
Filed Apr. 22, 1968, Ser. No. 723,220
Int. Cl. B65d *55/06, 77/10*
U.S. Cl. 292—307 **19 Claims**

A tamper-proof seal of sheet material having a flap adapted to be inserted into an aperture of the seal and foldable in one direction of rotation for insertion into the aperture whereby the flap has to be rotated in the opposite direction approximately 270° to attach the seal and wherein weakened zones are provided in the are connecting the flap with the seal to assure breakage of the

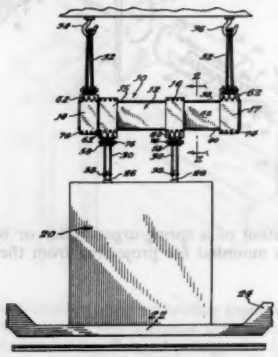
flap in case of tampering, whereby a rotation in the one direction of about 180° is required to open the seal.

3,561,809
HIGH TORQUE CARGO HOOK
David G. Harding, Morton, Pa., assignor to The Boeing Company, Seattle, Wash., a corporation of Delaware
Filed Dec. 29, 1967, Ser. No. 694,673
Int. Cl. B66c *1/00, 1/36*
U.S. Cl. 294—81 **2 Claims**



Cargo handling apparatus including a pair of arms having end portions adapted to receive a cargo sling for supporting a suspended load. The arms assume a loading position in which their end portions are disposed adjacent one another for receiving the sling at substantially a single location. After the sling is attached to the end portions, the arms are moved away from each other to provide support for the sling at spaced locations.

3,561,810
LIFTING BEAM ASSEMBLY
Harold V. Newsted, Downers Grove, Ill., assignor to Power Systems, Inc., Chicago, Ill., a corporation of Delaware
Filed Sept. 23, 1968, Ser. No. 761,529
Int. Cl. B66c *1/12*
U.S. Cl. 294—81 **6 Claims**



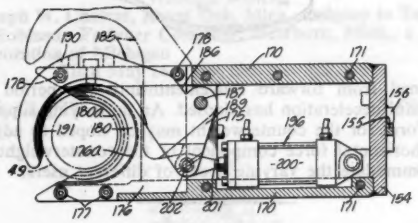
A lifting beam for cranes for use in the material handling area is designed in such a way that each one of a plurality of hanger brackets on the beam is movable along the length of the beam to an infinite number of positions

so as to make it possible to locate the hangers on the beam to balance the forces acting on the beam as a load is lifted. The beam generally is a wide flange beam and the hanger brackets are constructed in such a way as to provide rigidity to the beam without the use of stiffeners on the beam. The hanger brackets are reversible with the load attaching portion facing up or down as required. The hanger brackets can be located along the beam at precomputed locations depending upon the size of the load and the availability of one or two cranes for doing the lifting.

3,561,811
WELL PIPE RACKER

John W. Turner, Jr., Houston, Tex., assignor to Byron Jackson Inc., Long Beach, Calif., a corporation of Delaware

Filed May 23, 1968, Ser. No. 731,542
Int. Cl. E21b *19/00*
U.S. Cl. 294—90 7 Claims

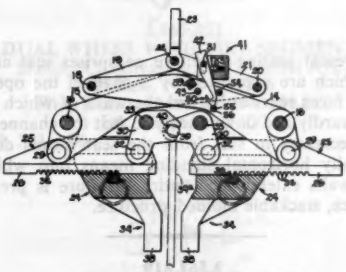


A well drilling rig having pipe racker apparatus in which a number of racker arms are controllable from a remote location to engage drill pipe tool joints and drill collars, one of the arms having a head for supporting the weight of lengths or stands of pipe or drill collars being added to or removed from the drill string, while the arms are retracted or extended and moved to place such stands in the rack therefor in vertical relation or to remove such stands from the rack therefor and position the stands over the well for connection to the drill string extending into the well.

3,561,812
GRAPPLE WITH LOCKING MECHANISM

Paul H. Dixon, Belvidere, Ill., assignor to Dixon Automatic Tool, Inc., Rockford, Ill., a corporation of Illinois

Filed Jan. 29, 1969, Ser. No. 794,868
Int. Cl. B66c *1/00*
U.S. Cl. 294—110 3 Claims

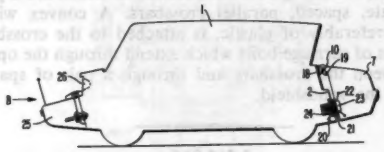


A grapple for gripping a succession of articles to be lifted in which jaws attached to arms move between open positions and closed or gripping positions in response to the arms being lowered to spread positions and raised to collapsed positions. Mounted on the grapple is a latch which swings between latched and unlatched positions automatically in response to raising and lowering of the grapple thereby to automatically lock the jaws open to grip an article and then to automatically unlock the jaws to free the latter for movement to their gripping positions. The latch is mounted by a pin-and-slot connection on one moving part of the grapple and can hook around a catch on another part of the grapple to lock the grapple open. The latch is spring biased to swing about the pin, and the latter moves up and down in the slot during use of the grapple to cause the latch to be biased first toward the latched position and then toward the unlatched position.

3,561,813
DETACHABLE END SECTION FOR PASSENGER CARS

Béla Barényi, Stuttgart-Vaihingen, and Hermann Renner, Magstadt, Wurttemberg, Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed June 19, 1968, Ser. No. 738,199
Int. Cl. B62d *33/04*
U.S. Cl. 296—28 7 Claims

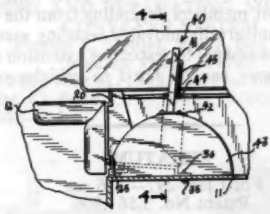


A passenger vehicle body including a main portion which extends only a relatively short distance forward of the front wheels of the vehicle and/or a relatively short distance rearward of the rear wheels, and detachable end sections which can be attached to the front and/or the rear end walls of the main portion as an extension thereof, said end sections being hingedly connected to the main portion of the body at two points spaced apart by a relatively large distance in the region of the upper edge of the wall of the detachable end section which faces the main portion of the body, said detachable end section lockingly engaging the main portion of the body at at least one point in the region of the lower edge of the wall of the end section facing the main body portion.

3,561,814
REAR SEAT MODIFICATION KIT AND METHOD

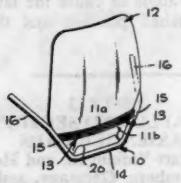
Reuben Klein, West Highway 210—I–94, Fergus Falls, Minn. 56537

Filed Aug. 8, 1969, Ser. No. 848,650
Int. Cl. B60n *1/10*
U.S. Cl. 296—65 3 Claims



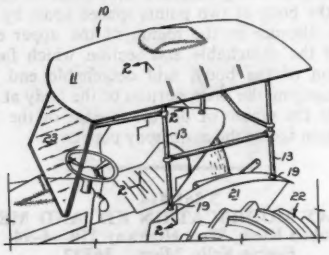
Two sets of pin and bushing members affixed between the forward edge of the rear seat in a utility vehicle and the floor of the vehicle so that the rear seat is pivotal in a forward direction from the upright position and removable by disengaging the pin and bushing members. The modification further including means for affixing the spare wheel above one of the wheel wells in the rear of the vehicle so that the entire rear portion of the vehicle can be cleared for load-carrying purposes.

3,561,815
COMBINATION WINDSHIELD AND HANDLEBAR FOR MOTORCYCLES AND THE LIKE
Frank G. Stone, Long Beach, Calif., assignor of one-half to Peter Mead, Canoga Park, Calif.
Filed June 21, 1968, Ser. No. 749,525
Int. Cl. B60j *1/02*
U.S. Cl. 296—78.1 **5 Claims**



A combination windshield and handlebar for motorcycles and the like. The device comprises a conventional handlebar, extending between portions of which are a pair of arcuate, spaced, parallel crossbars. A convex windshield, preferably of plastic, is attached to the crossbars by means of carriage bolts which extend through the opening between the crossbars and through a pair of spaced holes in the windshield.

3,561,816
VEHICLE CANOPY
Kevin Errol Koch, Unley Park, South Australia, Australia (4 Ford Ave., Torrens Park, South Australia, Australia 5062)
Filed May 13, 1968, Ser. No. 728,556
Int. Cl. B62d *25/06*
U.S. Cl. 296—102 **5 Claims**



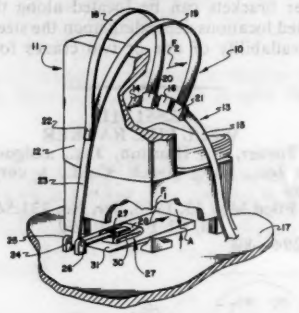
A vehicle canopy having a top member, a frame and support members, the frame having posts with extension members, support members depending from the extension members, and universally movable securing means securing the support members to respective extension members, so that the canopy can be fitted to vehicles of various shapes and sizes.

ERRATUM

For Class 297—216 see:
Patent No. 3,561,806

3,561,817
SAFETY HARNESS ASSEMBLY
Leo Austin Needham, 6104 Glen Alder, Hollywood, Calif. 90028
Filed June 20, 1968, Ser. No. 738,684
Int. Cl. B60r *21/10*
U.S. Cl. 297—216 **7 Claims**

A vehicle safety harness assembly includes shoulder straps interconnected with a slidable counterweight located either beneath the seat or behind it. Upon abrupt deceleration, the counterweight is thrust forwardly with a greater force than the upper body portion of the user and thus swiftly exerts tension on the straps so that the user is pulled rearwardly against the backrest where he is restrained from forward movement until the period of harmful deceleration has elapsed. An underlying support platform for the counterweight may be sloped to adjust the horizontal force component of the counterweight to accommodate the varying needs of different users.



3,561,818
SEATING FURNITURE MADE OF SYNTHETIC MATERIAL
Hartmut Lohmeyer, 189 Schleissheimerstrasse, 8 Munich 13, Germany
Filed Oct. 2, 1968, Ser. No. 764,499
Claims priority, application Germany, Oct. 5, 1967, P 16 54 305.8
Int. Cl. A47c *3/04*
U.S. Cl. 297—239 **11 Claims**

The present seating furniture comprises seat and rest means which are supported by a channel the open face of which faces rearwardly and the walls of which are inclined inwardly and downwardly so that the channel cross-section decreases in size from the seat means down to substantially horizontal standing means into which the channel walls extend. The entire furniture is preferably a one-piece, stackable molded structure.

3,561,819
RESTRAINT APPARATUS
Dennis N. Renneker, Warren, Mich., assignor to Chrysler Corporation, Highland Park, Mich., a corporation of Delaware
Filed Sept. 26, 1967, Ser. No. 670,638
Int. Cl. A62b *35/60*
U.S. Cl. 297—386 **4 Claims**

Energy absorbing restraint system for a passenger in a vehicle including, in one embodiment, a wire adapted to

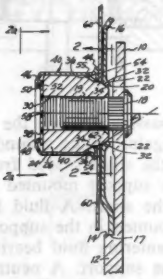
be drawn through a die and reduced in diameter as it is so drawn to absorb kinetic energy transferred from the passenger to the restraint system upon impact. Other em-

bodiments include energy absorbing cable and cable strands adapted to elongate a substantial amount without breaking to absorb energy.

3,561,820
WHEEL NUTS

Joseph W. Chaivre, Royal Oak, Mich., assignor to Towne Robinson Fastener Company, Dearborn, Mich., a corporation of Michigan

Filed May 16, 1969, Ser. No. 825,330
Int. Cl. B60b *7/06*
U.S. Cl. 301—9 **7 Claims**

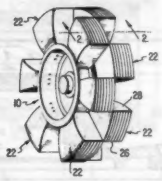


A nut for fastening a wheel to an axle flange and having a conical end adapted to mate with a conical depression in the wheel. The conical end extends into a cylindrical land portion and a chamfered portion of the nut head which is covered with a hard corrosion resistant cap extending all around the sides of the nut head, and which is crimped to the nut to retain a disc or button of plastic material to close the nut. The cap is expanded into a radial flange adjacent the chamfered portion of the nut head to retain a wheel cover in spaced relation to the wheel.

3,561,821
DUAL WHEEL WITH TIRE SEGMENTS

Samuel C. Pellegrino, 1297 Hertel Ave., Buffalo, N.Y. 14216

Filed Dec. 3, 1968, Ser. No. 780,810
Int. Cl. B60b *11/00*
U.S. Cl. 301—36 **2 Claims**

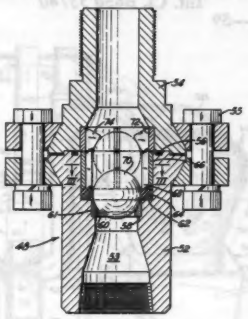


A dual wheel having adjacent rims having a drop center in which independently inflatable tire segments are in alternately staggered relation, whereby a single segment can be readily removed and repaired, the dual wheel tire provides improved traction on rough terrain and particularly in mud or loose soil, and provides a smooth bearing surface for passage over conventional road surfaces without damage to such road surfaces.

3,561,822
SOLID PARTICLE INJECTOR

Eber W. Gaylord, Pittsburgh, Robert J. Goodwin, Oakmont, Ernest A. Mori, Hampton Township, Allegheny County, and Joseph L. Pekarek, Penn Hills Township, Allegheny County, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa., a corporation of Delaware

Filed Apr. 25, 1968, Ser. No. 723,996
Int. Cl. B65g *53/30*
U.S. Cl. 302—14 **3 Claims**



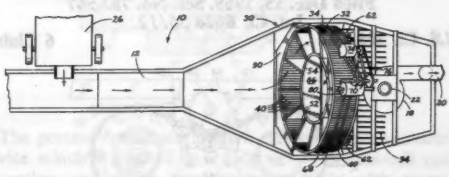
An injector in which a slow moving plunger reciprocates in a cylinder to inject a liquid having a high concentration of solid particles suspended therein into a stream of fluid under a high pressure. The inlet valve of the injector includes an inner, upwardly opening valve seat tapering downwardly at 19 to 23 degrees on which a valve ball seats during the pressure stroke of the plunger. The opening at the upper end of the valve seat has a radius such that the space between the seat at its upper end and the ball is not more than 0.01 inch. A deformable annular valve seal supported on the upper surface of the valve seat surrounding the tapered surface engages the valve ball and has a thickness such that the valve seal extends above the horizontal centerline of the valve ball when the ball rests on the valve seat.

This invention relates to apparatus for injecting solid particles into a stream of fluid under high pressure.

3,561,823
METERING AND SEPARATING MEANS FOR A CONVEYER SYSTEM

Forrest L. Meuret, Rte. 1, Box 224, Madras, Oreg. 97741

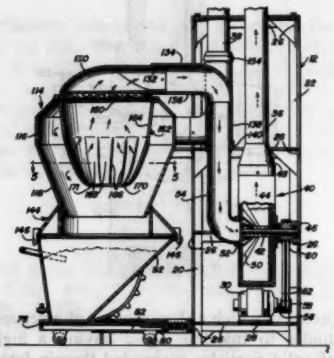
Filed July 31, 1968, Ser. No. 749,031
Int. Cl. B01d *33/02;* **B65g** *29/00, 53/30*
U.S. Cl. 302—14 **7 Claims**



Metering means for regulating the flow of articles moved along a flow path in a conveyer system including a rotatable open-centered wheel set transversely of the flow path and tilted downstream. The wheel has pockets

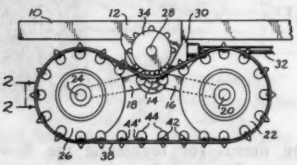
disposed about its open center which open toward the upstream side and toward the center of the wheel. A motor is provided for rotating the wheel. An arcuate shroud set within the center of the wheel closes off the center opening of each pocket as it is moved through an arc beneath the center of the wheel. A plate extending across the upstream end of the shroud prevents articles from being moved directly through the center of the wheel. A power-operated endless conveyer having fingers projecting outwardly therefrom separates articles in tne system.

3,561,824
CONE SEPARATOR
Virgil A. Homan, St. Henry, Ohio
(Parker Shady Acres, St. Marys, Ohio 45885)
Filed May 22, 1968, Ser. No. 731,185
Int. Cl. B65g *53/40*
U.S. Cl. 302—59 **9 Claims**



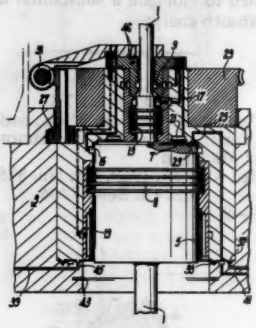
A stand from which a downwardly opening hood is supported for vertical adjustment, the hood having first and second vacuum lines opening into the hood at their inlet and outlet ends, respectively, and an upwardly opening and horizontally shiftable receptacle disposed beneath the hood with the hood being lowerable to a position closing the upper end of the receptacle in reasonably good air-tight sealed engagement therewith and the receptacle being horizontally shiftable outwardly from beneath the hood when the latter is in its raised position. The outlet end of the first vacuum line is adapted for connection with a suitable source of vacuum and the inlet end of the second vacuum line is adapted to be positioned adjacent the cutting member of a cutting tool adapted to perform cutting operations on a workpiece. Further, the hood is constructed in the form of a cone separator.

3,561,825
TRACK AND DRIVE SPROCKET FOR TRACK-LAYING
Duane M. Gibson, Milwaukie, and Richard H. A. Schoonover, West Linn, Oreg., assignors to Katrak Vehicle Co., Canby, Oreg., a corporation of Oregon
Filed Dec. 13, 1968, Ser. No. 783,567
Int. Cl. B62d *55/12*
U.S. Cl. 305—20 **6 Claims**



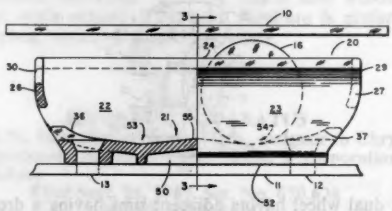
An endless track has longitudinally spaced ground-engaging grousers engageable by a drive sprocket having tooth elements pivoted thereon to seat positively against the confronting surfaces of the grousers during driving of the track.

3,561,826
HERMETICALLY-SEALED TRANSFER UNIT
Claude Cavy, 6 Square Bernard Palissy, 78 Fontenay-le-Fleury, France; Pierre Rouge, 8 Boulevard de la Terrasse, 91 Orsay, France; and Roland Tissot, Chemin de la Ferme de Bellevue, 91 Arpajon, France
Filed Nov. 19, 1968, Ser. No. 777,067
Claims priority, application France, Dec. 11, 1967, 131,758
Int. Cl. F16c *1/24*
U.S. Cl. 308—36.3 **1 Claim**



A rotary shaft passing through the wall of an atomic reactor is sealed against leaks around the shaft by two sets of baffles on the shaft spaced from each other and cooperating with a support mounted in the wall of the reactor receiving the shaft. A fluid film thrust bearing for the shaft is mounted in the support between the sets of baffles and a centering fluid bearing for the shaft is mounted within the support. A neutral gas under pressure is admitted to the shaft adjacent to the first set of baffles and between it and the exterior of the reactor with sealing means engaging the shaft and mounted in the support exterior thereof. Pumping means are provided around the shaft between the first set of baffles and the point of admission of the neutral gas. Second pumping means are provided opening around the shaft between the thrust bearing and the second set of baffles. A metallic seal is provided around the shaft engaging the support when the shaft is at rest.

3,561,827
RAILWAY FREIGHT CAR SIDE BEARING HOUSINGS
Orville Ingram and James D. Hipp, Toledo, Ohio, assignors to Midland-Ross Corporation, Cleveland, Ohio, a corporation of Ohio
Filed Dec. 13, 1968, Ser. No. 783,614
Int. Cl. F16c *19/04*
U.S. Cl. 308—138 **7 Claims**



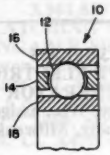
A self clearing, self centering side bearing, a housing structure having a roller for engagement with the car body

under service conditions. The housing for the roller is formed of a green sand casting free of core-formed vertically obstructed indentations. The base of the housing is formed with concave seats having end portions determined by the use of the same axis of generation for an arcuate seat as used for the circumference of the roller. Contact by the roller with this arcuate seat effectively limits service movement of the roller when the roller moves toward the ends of the housing effectively transferring the service force to the base of the housing rather than to the end of the housing. This roller seat has a centrally dividing opening extending longitudinally of the base to admit of a rivet or other securing fastener for fixedly mounting the housing to the truck bolster. The housing has laterally extending walls tied together by a web disposed at each end and below the top marginal edge of the housing and within the vertical limits of the axis of the roller.

3,561,828
ROLLING ELEMENT BEARINGS

Dean C. Glenn, League City, Tex., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Original application Nov. 28, 1967, Ser. No. 686,344, now Patent No. 3,500,525, dated Mar. 17, 1970. Divided and this application Apr. 10, 1969, Ser. No. 840,870
Int. Cl. F16c *33/66*
U.S. Cl. 308—187 **1 Claim**

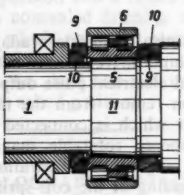


A solid film lubricant is applied to components of rolling element bearings having porous retainers prior to use in a vacuum.

3,561,829
MEANS FOR MAINTAINING THE CLEARANCE IN ROLLING BEARINGS

Karl Helge Konstantin Heldt, Savedalen, Sweden, assignor to Aktiebolaget Svenska Kullagerfabriken, Goteborg, Sweden, a corporation of Sweden

Filed Dec. 6, 1968, Ser. No. 781,898
Claims priority, application Sweden, Dec. 7, 1967, 16,789
Int. Cl. F16c *33/00*
U.S. Cl. 308—189 **1 Claim**

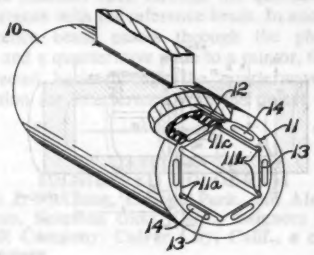


A device for maintaining the clearance in rolling bearings subjected to varying temperatures contains at least two annular members made of materials having different heat expansion coefficients. These members engage each other along a conical surface and due to the different expansions of the members the breadth of the pair of members will vary as the temperature changes. One of the members abuts against a ring of the bearing, and the other member abuts against a support, which may be regarded as fixed in relation to the ring, thus permitting compensation movements to take place.

3,561,830
BEARING ASSEMBLY

Roy L. Orndorff, Jr., Kent, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y., a corporation of New York

Filed Apr. 22, 1968, Ser. No. 722,977
Int. Cl. F16c *27/00*
U.S. Cl. 308—238 **13 Claims**

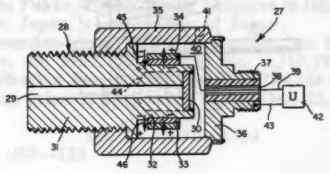


A resilient elastomeric insert for bearings of the type used for marine propeller shafts. The insert is formed of low hardness elastomeric material and has rigid backing strips inserted in the elastomer spaced closely adjacent the bearing surfaces. The insert is formed in a one-piece cylindrical configuration for short bearings and is formed as a longitudinal strip for bearings of large diameter and length which have the bearing surface provided by a plurality of separately removable strips.

3,561,831
TRANSDUCER SYSTEM FOR DETECTING CHANGES IN APPLIED FORCES

Vernon F. Alibert, Chester Heights, and Thomas H. Carey, Chester, Pa., assignors to Columbia Research Laboratories, Inc., Woodlyn, Pa., a corporation of Pennsylvania

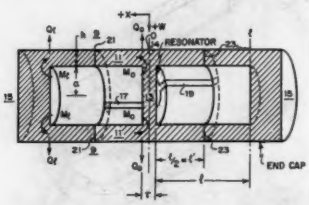
Filed Dec. 3, 1969, Ser. No. 881,733
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.7 **10 Claims**



The present transducer system employs a piezo-electric device which is formed in a loop or an endless-belt configuration and which is polarized radially with respect to the longitudinal axis of said loop, i.e., polarized from the inside surface of said loop toward the outside surface thereof. The piezo-electric device is formed to be fitted circumferentially with a fluid container or fluid carrying conduit or a solid bar in such a fashion that any changes

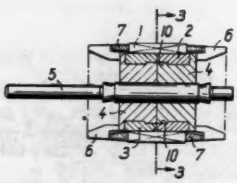
in pressure in the fluid or forces applied to the bar will cause strains in the direction of the radial polarization, i.e., perpendicular to the longitudinal axis or flow path of the conduit. The resulting radial strain generates a voltage which is proportional to the change in pressure of the fluid or the change in the applied force to the bar being monitored. The system provides a means for detecting the "strain generated voltage" and accordingly initiates monitoring or control signals in response thereto.

3,561,832
QUARTZ RESONATOR PRESSURE TRANSDUCER
Henry E. Karrer, Palo Alto, and Jerry G. Leach, Santa Clara, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif., a corporation of California
Filed Dec. 5, 1969, Ser. No. 882,501
Int. Cl. H01v 7/00
U.S. Cl. 310—9.6 **16 Claims**



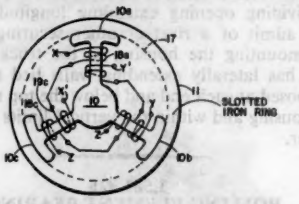
A pressure transducer uses a precision piezoelectric quartz resonator that exhibits linear changes in frequency when subjected to radial compressive stresses. A cylindrical quartz tube is integral with the circular resonator and acts as a diaphragm which transfers and concentrates the stress from the applied pressure onto the periphery of the resonator. The tube and resonator are fabricated from a single quartz crystal to minimize nonelastic effects.

3,561,833
MOTOR
Heinz Heilmann and Klaus Frohmüller, Oldenburg, Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Germany
Filed Nov. 10, 1969, Ser. No. 875,147
Claims priority, application Germany, Nov. 10, 1968, P 18 08 133.9
Int. Cl. H02k 1/02, 19/14
U.S. Cl. 310—46 **12 Claims**



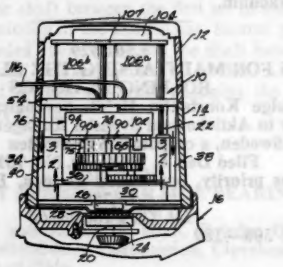
A low cost hysteresis motor having a rotor whose yoke is formed of one or more hollow cylinders of hysteretic material, the interiors of which are filled with a non-magnetic filler material provided with an axial bore to receive the rotor shaft. The exterior of the cylinders is enclosed by a lamination packet of layers of annular sheets of conventional dynamo sheet iron which supports a squirrel cage. At the ends of the rotor, the filler material is preferably formed to provide protrusions which serves as ventilation vanes.

3,561,834
STEPPING MOTOR HAVING HYPOCYCLICALLY REVOLVING ROTOR
Joseph L. Durand, Woodland Hills, Calif., assignor to Systems Technology, Inc.
Filed Mar. 19, 1969, Ser. No. 842,414
(Filed under Rule 47(b) and 35 U.S.C. 118)
Int. Cl. H02k 37/00
U.S. Cl. 310—49 **14 Claims**



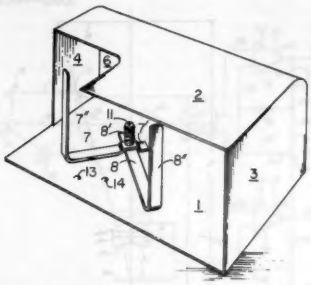
A stepper motor having a polyphase stator and a rigid ring-like rotor of magnetic material mounted for hypocyclic rotation relative to the stator. The rotor is circumferentially slotted by means of a number of uniformly axially and circumferentially spaced slots, and adjacent field pieces of the stator are oppositely poled for the generation of an improved sealing pole effect in the rotor, whereby detent action and reduced rotor slip are obtained.

3,561,835
ROTARY DRIVE ELECTRICAL PULSE GENERATOR
Clayton Fyfe, Milwaukee, Wis., assignor to Badger Meter Manufacturing Company, Milwaukee, Wis., a corporation of Wisconsin
Filed Mar. 24, 1969, Ser. No. 809,910
Int. Cl. H02k 7/00
U.S. Cl. 310—66 **16 Claims**



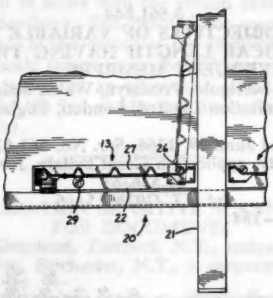
An electromechanical transducer adapted to utilize a mechanical rotary input drive from a metering device and to generate a digital electrical pulse output for sensing or reading at a station remote from the meter. The rotary input drives a gear which is connected by a coil spring to a coaxially disposed rotatable magnet assembly. A trigger mechanism sequentially restrains the magnet assembly to cause loading of the coil spring upon rotation of the gear, and thereafter releases the magnet assembly for intermittent, limited rotation in the direction of rotation of the gear under the impetus of the coil spring. A U-shaped core with coils thereon is positioned with the ends of the core adjacent the magnet assembly for generating an electrical pulse upon each such rotation of the magnet assembly.

3,561,836
PAPER DISPENSERS
Curtis F. Bennett, 655 W. Hatfield St., and George C. Wright, 965 Calle Bocina, both of Tucson, Ariz. 85706
Filed Jan. 14, 1969, Ser. No. 791,066
Int. Cl. B65h 19/00
U.S. Cl. 312—39 6 Claims



The dispenser consists of a steel box with an open bottom, to be fastened to a wall. The rear wall of the box carries two arms welded at right angles and rotatably bolted to the rear wall. Each arm carries a 90° bend for receiving a roll of toilet paper. Dimples in the rear wall lock the arms in dispensing position.

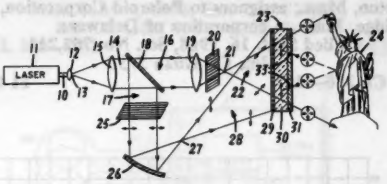
3,561,837
CONCEALED LATCHING MECHANISM FOR SWINGABLE SHELVES
Raymond A. Magnuson, Hinsdale, and Donald L. Brorson, Western Springs, Ill, assignors to Beatrice Foods Co., Chicago, Ill., a corporation of Delaware
Filed Apr. 3, 1969, Ser. No. 813,007
Int. Cl. A47b 67/02
U.S. Cl. 312—313 7 Claims



A semi-permanent storage facility with a shelf which is pivotally mounted for swinging movement between a normal lowered position and a raised position. The shelf is provided with concealed latching mechanisms of the sliding bolt-type which not only permit the shelf to be locked in its normal lowered position but which also structurally reinforce the shelf and aid in centering it as it is lowered from its raised position.

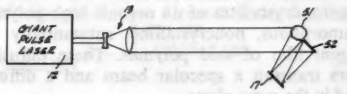
3,561,838
HOLOGRAPHIC IMAGING
Dennis Gabor, London, England, assignor to Columbia Broadcasting System, Inc., New York, N.Y., a corporation of New York
Filed Mar. 24, 1967, Ser. No. 625,795
Int. Cl. G02b 27/22
U.S. Cl. 350—3.5 8 Claims

In the particular embodiments of the invention described herein, deep holographic imaging is accomplished by polarizing the object and reference beams in two perpendicular directions and passing one of the beams twice through a quarterwave plate prior to formation of the hologram. In one form, the object illuminating beam is passed through a photographic emulsion and then through a quarterwave plate toward the object, from



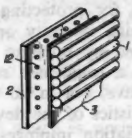
which it is reflected back through the quarterwave plate for interference with the reference beam. In another form, the reference beam passes through the photographic emulsion and a quarterwave plate to a mirror, from which it is reflected back through the quarterwave plate to the emulsion for interference with the object beam.

3,561,839
HIGH-SPEED HOLOGRAM
Frederick J. McClung, Canoga Park, and Alexander D. Jacobson, Sherman Oaks, Calif., assignors to Hughes Aircraft Company, Culver City, Calif., a corporation of Delaware
Continuation of application Ser. No. 464,031, June 15, 1965. This application Oct. 6, 1969, Ser. No. 866,094
Int. Cl. G02b 27/00; H01s 3/00
U.S. Cl. 350—3.5 4 Claims



A holographic system including a giant pulse ruby laser operated with transverse mode selection and longitudinal mode selection for producing pulsed spatially coherent and temporally coherent radiation, a portion of which illuminates a subject and is reflected to a photographic film as a subject beam, and another portion of which is reflected from a flat mirror and is directed towards the photographic film as a reference beam.

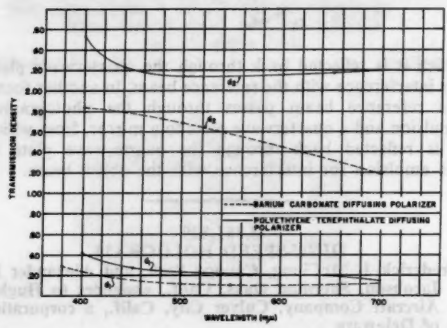
3,561,840
PROJECTION SCREEN
Takeo Seki and Masuo Fukumura, Kokubunji-shi, and Hajime Fukke, Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan, a corporation of Japan
Continuation-in-part of application Ser. No. 686,550, Nov. 29, 1967, now Patent No. 3,510,197. This application June 3, 1968, Ser. No. 734,165
Claims priority, application Japan, Dec. 22, 1967, 42/81,867
Int. Cl. G03b 21/60
U.S. Cl. 350—128 5 Claims



Parallel transparent rods are bonded to each other and to a transparent film. The film's other side is bonded to a

diffused reflection sheet but is separated by a microscopic air gap. Paste dot between the film and the reflecting sheet provide the gap.

3,561,841
DIFFUSING LIGHT POLARIZERS
Kestutis Norvaisa, Concord, and Richard F. Wright, Acton, Mass., assignors to Polaroid Corporation, Cambridge, Mass., a corporation of Delaware
Filed Sept. 16, 1968, Ser. No. 762,211
Int. Cl. G02b 5/30
U.S. Cl. 350—157 11 Claims

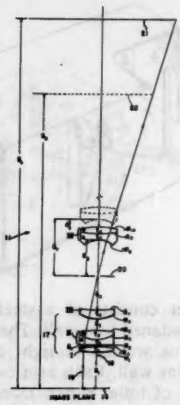


Highly efficient diffusing light polarizers of a new type are described. The new diffusing light polarizers comprise an oriented suspension of doubly refracting, i.e., birefringent, crystallites of an organic high polymer within an amorphous, noncrystalline, substantially uniaxial, birefringent film of said polymer. These diffusing light polarizers transmit a specular beam and a diffuse beam polarized in the same plane.

3,561,842
LIGHT DISRUPTER
Billy M. Horton, Kensington, Md., assignor to the United States of America as represented by the Secretary of the Army
Filed Apr. 30, 1965, Ser. No. 453,887
Int. Cl. G02f 1/02, 1/36
U.S. Cl. 350—160 7 Claims

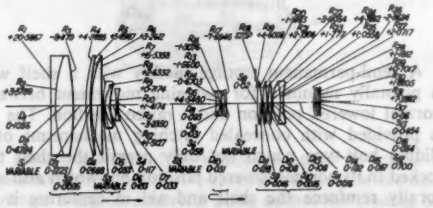
An optical device for protecting a viewer from the harmful effects of high intensity optical radiation. This result is accomplished by bonding a light transmissive or reflective film to a roughened substrate. The film is slightly light absorptive, but in no way intereferes with the optical characteristics of the device used. When high intensity optical radiation impinges on the device, the thermal effects of the light absorbed in the film destroy the film and expose the roughened substrate which will materially disrupt the transmission or reflection of light.

3,561,843
MULTIFOCAL PROJECTION LENS SYSTEM
Harold E. Rosenberger, Brighton, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y., a corporation of New York
Filed Aug. 27, 1969, Ser. No. 853,426
Int. Cl. G02b 9/34, 21/02
U.S. Cl. 350—183 4 Claims



A projection lens system composed of a fixed positive power front lens group and a focusable negative power rear lens group, said system being operative within a numerical magnification range of at least 3⅓ and producing a flat field, the image formed by said system being particularly characterized by low distortion as well as being well corrected for the usual chromatic and monochromatic image aberrations.

3,561,844
OPTICAL OBJECTIVES OF VARIABLE EQUIVALENT FOCAL LENGTH HAVING TWO MOVABLE DIVERGENT MEMBERS
Peter Arnold Merigold, Prestatyn, Wales, assignor to The Rank Organisation Limited, London, England a British company
Filed June 29, 1966, Ser. No. 561,539
Claims priority, application Great Britain, June 29, 1965, 27,526/65
Int. Cl. G02b 15/16
U.S. Cl. 350—184 13 Claims



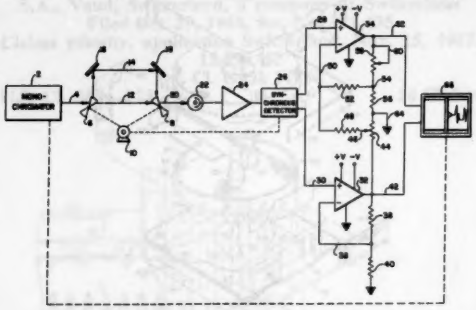
A zoom lens mechanically corrected for aberrational deviations throughout the zooming range, said lens having a convergent front member stationary during zooming, divergent second and third members axially movable to effect zooming, and a stationary convergent rear member, the focal lengths of the second and third members together with their axial movements being determined within ranges to provide an increased zoom ratio and the constructions of the second and third members having parameters determined within ranges to provide improved stabilization of aberrations throughout the zooming range.

3,561,845

RADIANT ENERGY ANALYZER INCLUDING MEANS FOR OFFSETTING AND SCALING THE RATIO OF TWO SIGNALS

Attila D. Boronkay, La Habra, and Kenneth V. Matthews, Garden Grove, Calif., assignors to Beckman Instruments, Inc., a corporation of California

Filed June 2, 1969, Ser. No. 829,668
Int. Cl. G01d 3/42; G01j 3/08; G01n 21/27
U.S. Cl. 356—205 4 Claims



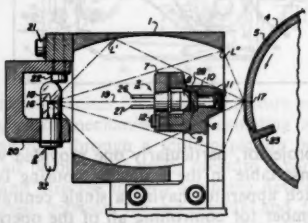
There is disclosed a circuit in a radiant energy analyzer for offsetting and scaling the ratio of two signals. The circuit in part comprises a first channel and a second channel amplifying device. A first signal is connected to the first channel amplifying device the output of which is connected to a first voltage divider component. A second signal is connected to the second channel amplifying device the output of which is connected to a second voltage divider component. The second divider is connected to the second channel amplifying device so as to provide a portion of the second channel amplifying device signal output as degenerative feedback. The first divider is connected to the second channel amplifying device so as to provide a portion of the first channel amplifying device output signal in series with the second channel amplifying device feedback. The ratio of the second signal to the first signal at the output of the amplifying devices is equal to a scale factor times the difference between the input signal ratio and an offset term where the offset is determined by the first divider and the scale factor by the second divider.

3,561,846

RADIATION SENSITIVE SCANNER FOR DOCUMENTS

David O. Kingsland, Fairport, N.Y., assignor to Xerox Corporation, Rochester, N.Y., a corporation of New York

Filed Jan. 31, 1969, Ser. No. 795,510
Int. Cl. G06k 9/00
U.S. Cl. 250—219 12 Claims



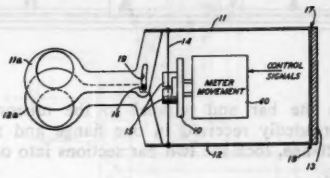
Apparatus for scanning documents in fascimile machines and the like having a light source, elliptical reflector, means to accumulate and focus reflected light contained within the reflector and means for generating an electrical signal in response to the reflected light.

3,561,847

AUTOMATIC ELECTRORESPONSIVE LIGHT REGULATOR UTILIZING TAUT BAND METER MOVEMENT

Sotirios C. Kitsopoulos, Summit, Rembert R. Stokes, Middletown, and Werner Thommen, Marlboro, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J., a corporation of New York

Filed June 5, 1968, Ser. No. 734,746
Int. Cl. G02f 1/30; G03b 9/06
U.S. Cl. 350—272 5 Claims



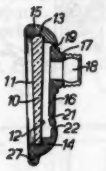
An electroresponsive light regulating device is constructed with a pair of light controlling elements such as filters or iris blades mounted on a pair of cantilever spring members. The cantilever springs are connected together by a taut band and a meter movement is positioned to engage and displace the taut band and thus alter the relation of the light conrtolling elements.

3,561,848

REAR VIEW MIRRORS FOR VEHICLES

Douglas J. Cunningham, Chichester, England, assignor to Wingard Limited, Chichester, England, a British company

Filed Nov. 26, 1968, Ser. No. 778,996
Claims priority, application Great Britain, Jan. 23, 1968, 3,501/68
Int. Cl. G02b 5/08
U.S. Cl. 350—281 3 Claims



In a rear-view mirror for vehicles incorporating a mirror element having two surfaces of different reflecting powers arranged at a small angle to each other within a case and means for bringing either surface at will into an operative position, the case is moulded in one piece from plastic and front and back parts of the case respectively carrying the mirror element and means for mounting the mirror on a support are articulated together along at least one line formed by reducing the thickness of the plastic.

3,561,849

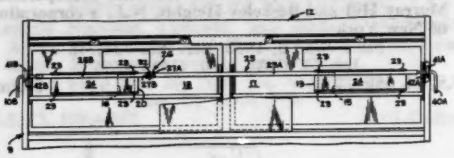
MIRROR MOUNTING MECHANISM FOR WHEEL ALIGNING APPARATUS

Tracy Carrigan, Lansing, Mich., assignor to FMC Corporation, San Jose, Calif., a corporation of Delaware

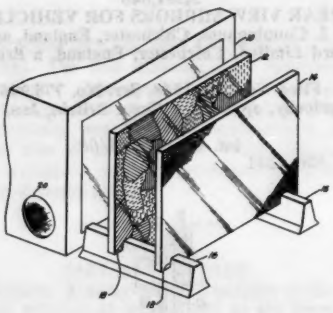
Filed Feb. 17, 1969, Ser. No. 799,820
Int. Cl. G02b 5/08
U.S. Cl. 350—299 7 Claims

A background unit which is positioned in front of a vehicle to be aligned has a frame with a mirror bar mounted thereon. The mirror bar has two sections, each section having a mirror secured thereto. The outer ends

of each section are rotatably mounted in a bearing block which is slidably mounted on the side of the frame. The inner ends of the bar sections, each of which have flanges, are pivotally connected on an axis substantially perpendicular to the bar and parallel to the mirrors. Two screws, threadedly received in one flange and abutting the other flange, lock the two bar sections into one rigid mirror bar.



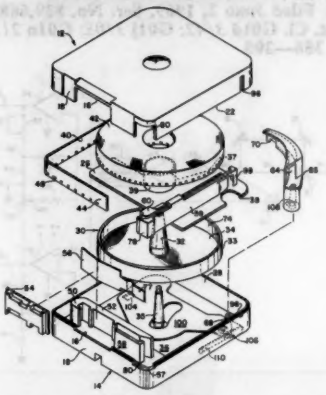
3,561,850
OPTICAL EFFECT GENERATOR WITH TELEVISION DISPLAY SCREEN
Robert Shaffer, 10238 56th St., Mira Loma, Calif. 91752
Filed June 20, 1968, Ser. No. 738,613
Int. Cl. G02b *5/22*
U.S. Cl. 350—317 **3 Claims**



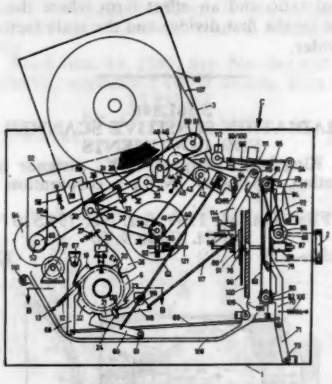
An optical effect generator utilizing a plurality of light sources, a patterned light transmitting medium and a light diffusing or refracting medium. The elements of the apparatus are arranged such that the light medium and the light transmitting medium are interposed between the viewer and the light sources with the diffusing medium being located between the viewer and the slide.

3,561,851
MOVIE CAMERA FILM CARTRIDGE
William A. Martin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y., a corporation of New Jersey
Filed Aug. 13, 1968, Ser. No. 752,399
Int. Cl. G03b *23/02*
U.S. Cl. 352—78 **11 Claims**

A filmstrip cartridge for a movie camera having a pair of chambers arranged so that film can be driven from one chamber to the other through alternate "sound" or "silent" film paths without using a driving take-up core. Film from a supply roll in one chamber is advanced by the action of the camera pull-down claw past an exposure aperture through either of the alternative paths to a pivotal arm which feeds the film into a rotatable holder in the other chamber. A lead portion of the advanced film is directed by the arm into engagement with a side wall of the holder to cause the holder to rotate and convolute received film as subsequent portions of the film are directed radially inwardly of film coiled in the holder. The cartridge may be provided with means for indicating the amount of film advanced by the pull-down mechanism during use of the camera.



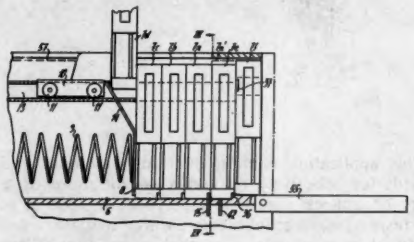
3,561,852
SWITCH APPARATUS FOR A FILM PROJECTOR
Fritz Krumbein and Dietrich Becker, Stuttgart-Mohringen, Germany, assignors to Zeiss Ikon Aktiengesellschaft, Stuttgart, Germany, a corporation of Germany
Filed June 27, 1968, Ser. No. 740,665
Claims priority, application Germany, July 1, 1967, Z 12,925
Int. Cl. G03b *1/56*
U.S. Cl. 352—157 **7 Claims**



A film projector, particularly one provided with a film cartridge insertable in the projector housing is equipped with a switch apparatus having a single central rotatable control member for controlling all of the operative functions of the projector, such as driving the film feed reel, the film take-up reel, controlling the drive motor, the film threading mechanism, the film advancing mechanism, the shutter mechanism and the forward and return movement of the film. This is accomplished by a cam disc having several cams mounted on the central rotable control

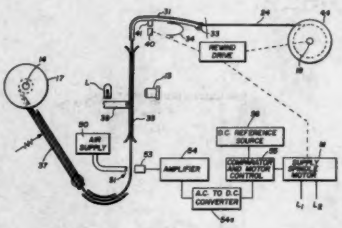
member. Each cam controls a particular lever mechanism, each of which performs in the required sequence one particular operative function of the projector.

3,561,853
MOTION-PICTURE PROJECTOR FOR AUTOMATICALLY PROJECTING A SERIES OF FILMS IN CASSETTES
Louis Thevenaz, Vaud, Switzerland, assignor to Paillard S.A., Vaud, Switzerland, a company of Switzerland
Filed Oct. 29, 1968, Ser. No. 771,435
Claims priority, application Switzerland, Nov. 15, 1967, 15,996/67
Int. Cl. G03b *21/04*
U.S. Cl. 352—123 14 Claims



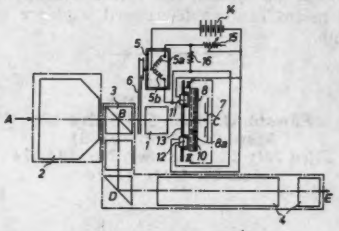
A series of cams ensures the correct movement of a row of cassettes in the projector magazine, and the timed operation of levers, for automatically projecting a film while rewinding the previously projected film onto its spool in its cassette.

3,561,854
APPARATUS FOR MONITORING REWIND IN A MOTION PICTURE PROJECTOR
John J. Bundschuh, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y., a corporation of New Jersey
Filed Dec. 22, 1967, Ser. No. 692,814
Int. Cl. G03b *23/00*
U.S. Cl. 352—124 3 Claims



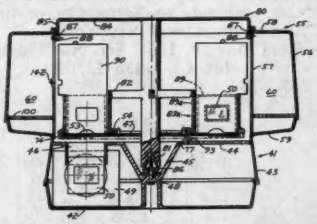
A rewind mechanism for a motion picture projector includes a control mechanism for regulating a drive for transporting film through a motion picture projector. A stream of air or other gas under pressure is carried by the projector and directed toward a sensing device. The film is transported between the air supply and the sensing device so that perforations in a side edge of the film and the portions of film between the perforations alternatey permit and block movement of air from the supply to the sensing device. The sensing device is coupled to the control means so that the drive for the film is controlled as a function of the output of the sensing device.

3,561,855
CINEMATOGRAPHIC APPARATUS WITH BUILT-IN EXPOSURE METER
Helmut Mayr, Richard Pelte, and Theodor Huber, Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Sept. 19, 1968, Ser. No. 760,791
Claims priority, application Germany, Sept. 29, 1967, A 56,935
Int. Cl. G03b *19/18, 9/10*
U.S. Cl. 352—141 10 Claims



The shutter (8) of a motion picture camera has a flat light reflecting and diffusing front surface (8*a*) which directs diffused scene light against one or both parallel-connected photoelectric resistors (11, 12) in the circuit of an exposure meter (5, 11, 12, 14) which is built into the camera and serves to adjust the diaphragm (6). The front surface is provided with a flat plate-like liner (10) of transparent lightweight synthetic plastic material. When the shutter admits scene light to an unexposed film frame (7), its front surface is moved away from the path (A–B–C) of incoming scene light. When the shutter is at a standstill, its front surface directs light against a single photoelectric resistor (11).

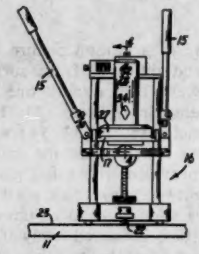
3,561,856
SOUND SLIDE PROJECTOR
William Castedello, Southington, Stephen G. Gilvar, New Britain, and Ray L. Marquis, Brookfield, Conn., asignors to The Kalart Company, Inc., Plainville, Conn., a corporation of New York
Filed Sept. 3, 1968, Ser. No. 757,023
Int. Cl. G03b *31/06*
U.S. Cl. 353—19 20 Claims



A sound slide projector for projecting still pictures, particularly slides, and playing back sound recorded on magnetic tape or recording sound on such tape has a tray for accommodating a plurality of cartridges each including magnetic tape from which sound is to be played back or on which sound is to be recorded and a compartment for releasably retaining a slide to be projected. The tray has a plurality of compartments open at the bottom and each accommodating one of the cartridges and is movable with reference to a platform including a discharge slot. Stepwise of the movement of the tray brings successive cartridges into registry with the discharge slot to permit dropping of the respective slide into a presentation position. Each slide is returned from the presentation position into the respective cartridge upon

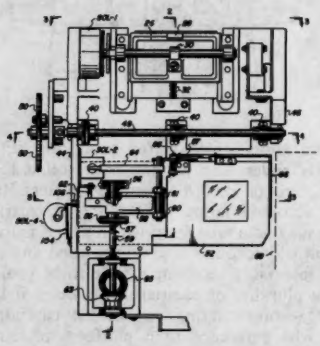
completion of a presentation. The sound projector further has an optical system for projecting a slide in the presentation position and a sound system for reproducing sound from the tape of the respective cartridge or recording sound on such tape. A drive mechanism including a play-back capstan pulls the tape in a cartridge in the presentation position past the sound head of the projector and a rewind mechanism including a rewind capstan rewinds the tape upon completion of a play-back or recording. A cycling mechanism operates tray moving means, the sound system, the optical system and slide returning means in a predetermined sequence and time relationship.

3,561,857
NADIR SCOPE
Edward M. Bean, 508 S. 3rd W., Missoula, Mont. 59801
Filed July 12, 1968, Ser. No. 744,374
Int. Cl. G01c *11/14*
U.S. Cl. 353—6 **8 Claims**



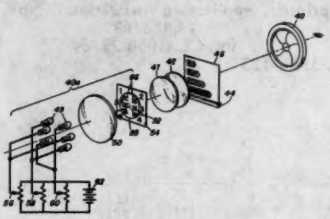
The nadir scope is for use in realigning a topographic map with a stereoscopic projector. The device comprises a mounting member positioned relative to a movable table in a predetermined attitude. A vertical focusing member is aligned along the vertical axis being related to the map and is carried on the mounting member. Use of the nadir scope permits vertical alignment and centering of a projector above selected points on the map.

3,561,858
AUTOMATIC MICROFILM FEEDER, SCANNER AND PROJECTOR
Hans H. Balbierer, Fairport, and Frank R. Hynes, Rochester, N.Y., assignors to Xerox Corporation, Rochester, N.Y., a corporation of New York
Filed May 20, 1968, Ser. No. 730,459
Int. Cl. G03b *23/02*
U.S. Cl. 353—25 **8 Claims**



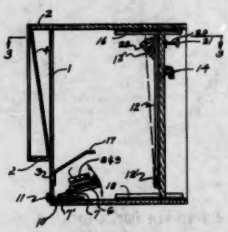
A projector for automatically feeding microfilm aperture cards including a card transport for feeding card seriatim to a card carriage, where each card is registered, scanned and ejected automatically from the carriage.

3,561,859
OPTICAL APPARATUS AND METHODS FOR VIEWING OR DISPLAYING IMAGES
Helmut Heckscher, Newton Center, and Peter F. Mueller, Concord, Mass., assignors to Technical Operations, Incorporated, Burlington, Mass., a corporation of Delaware
Filed Feb. 14, 1968, Ser. No. 705,524
Int. Cl. G03b *5/18, 21/00*
U.S. Cl. 353—25 **8 Claims**



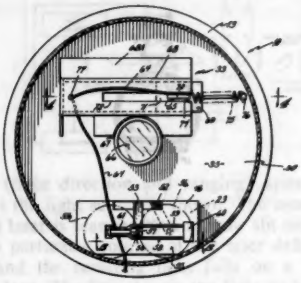
This application depicts, inter alia, methods and apparatus for selectively retrieving one or more of a plurality of images stored in superposition upon a record in respective multiplication with spatially periodic modulation of unique azimuthal orientation. Ways are shown for varying the relative intensity of the retrieved images. Disclosed embodiments of the invention are adapted for viewing or displaying in natural or selectively distorted color a scene recorded on black and white film as three superimposed color separation images respectively modulating a spatial carrier of distinct angular orientation. Yet another embodiment is adapted for viewing or displaying a selected one or more of a large number of different scene images which have been recorded in superposition on a common recording medium in respective multiplication with an angularly unique spatial carrier.

3,561,860
VIEWING APPARATUS
Leonard F. Rudolph, 6600 Vincent Lane, Baltimore, Md. 21215
Filed May 16, 1969, Ser. No. 825,282
Int. Cl. G03b *21/28*
U.S. Cl. 353—77 **2 Claims**



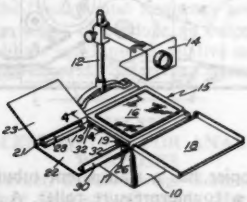
An enclosed viewing apparatus having a cabinet and a screen positioned on one side thereof, and an extended portion about the screen area having a recessed portion under the screen, the screen being provided with a light filter positioned at the extended portion to take away the glare that may come from the screen having means within the enclosure for reflecting images upon the screen at predetermined intervals.

3,561,861
SELF-CONTAINED PROJECTOR AND SCREEN UNIT
John F. Mayer, Fort Thomas, Ky., assignor to Kenner Products Company, Cincinnati, Ohio, a corporation of Delaware
Filed Jan. 9, 1969, Ser. No. 790,013
Int. Cl. G03b 1/48
U.S. Cl. 353—95 9 Claims



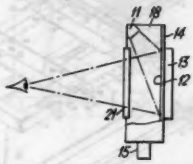
A self-contained projector and screen unit comprising, in preferred form, (a) a housing mounting a translucent screen on one side thereof, (b) a film strip having a series of image carrying frames enclosed within the housing, (c) a projection system, including a lens and a light source, positioned inside of the housing and adapted to project the film strip's frames onto the screen, (d) a switch for selectively actuating the light source, (e) frame sequencing apparatus for selectively moving film frames one at a time in sequence through the projection system, and (f) a pull cord relating the frame sequencing apparatus to the switch and extending outside of the housing. As the cord is repeatedly pulled by a child the film strip frames are sequentially presented one at a time to the projection system; also, the light source is turned on only when the cord is pulled. Thus, the unit operates to project a different image onto the screen from the film strip each time and only when the cord is pulled.

3,561,862
CONTAINER FOR PROJECTUALS
Percy Frederick Albee, Jr., Barrington, R.I., assignor to Q-Panel Corporation, a corporation of Rhode Island
Filed Apr. 22, 1968, Ser. No. 723,181
Int. Cl. G03b 21/32
U.S. Cl. 353—122 2 Claims



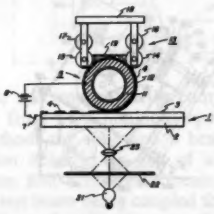
A container for overhead visual projectuals that simplifies the storage and use of projectuals by enabling the container to be stored vertically on a shelf or in a file drawer through the utilization of a shelf-back.

3,561,863
COLOR DISPLAY APPARATUS
Arthur Edward Brewster, Cheshunt, Hertfordshire, England, assignor to International Standard Electric Corporation, New York, N.Y., a corporation of Delaware
Filed July 8, 1968, Ser. No. 743,189
Claims priority, application Great Britain, Sept. 21, 1967 42,934/67
Int. Cl. G03g 15/00
U.S. Cl. 355—3 16 Claims



Apparatus for displaying in color information contained in signals received by the apparatus. A latent image corresponding to the received signals is formed either electromagnetically or electrostatically on a display recording surface by selectively charging those areas of the recording surface which surround the desired image. The display recording surface is permanently colored with an array of at least two color regions, preferably a reseau of color lines arranged parallel to an axis of the recording surface and in groups, with each of the lines of a group being a different primary color and the order of arrangement of the lines being the same in each group to provide a repetitive order of colors. Powder particles having a color which contrasts with the colored lines are applied to the latent image to form a two-dimensional color image which is viewable directly from the display recording surface without the need of projection or printing means.

3,561,864
ELECTROPHORETIC COATING DEVICE
Leonard M. Carreira, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y., a corporation of New York
Filed Oct. 2, 1968, Ser. No. 764,478
Int. Cl. G03g 15/00
U.S. Cl. 355—3 4 Claims

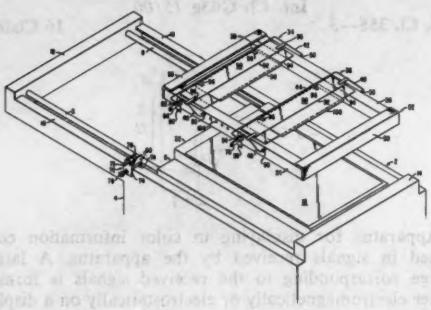


An electrophoretic imaging process is disclosed utilizing a continuous coating device. The imaging process uses at least one roller electrode and the coating device includes two coating members positioned in contact with the surface of the roller electrode. As the roller rotates a photoelectrophoretic imaging suspension is metered onto its surface by one of the coating members.

3,561,865
COPYING APPARATUS
Lester L. Burdick, Jr., Farmers Row, Groton, Mass. 01450
Filed Mar. 9, 1967, Ser. No. 621,947
Int. Cl. G03b 27/62
U.S. Cl. 355—23 13 Claims

The invention is an apparatus which is an improvement over existing copying machines such as the electro-

static type of machine. The apparatus provides a holder for a document for holding it on the platen of a copying machine for copying one surface of the document, and then automatically movable means turn the holder and document over on the platen so that the other side will be copied. Either a single or a plurality of documents



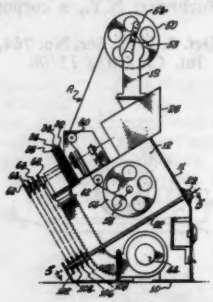
may have both sides copied on a single sheet of paper. The holder is pivotally mounted on the copying machine, and is automatically swung to either of two positions with respect to the platen, in one of which one side of the material is copied, and in the other, the other side of the material is copied.

3,561,866

FILM COLOR DENSITY SETTING INDICATOR

Lester Cohen, Los Angeles, Calif., assignor to Cinefx, Inc. of California, Hollywood, Calif., a corporation of California

Filed Feb. 13, 1968, Ser. No. 705,198
Int. Cl. G03b *27/76*
U.S. Cl. 355—35 **6 Claims**



A method to rapidly color balance and density balance a film interpositive and a film color density setting indicator comprising a light, a film guide, a plurality of color and density filters, appropriate lenses, and a screen in operative optical alignment, whereby a color image displayed on the screen can be color and density balanced.

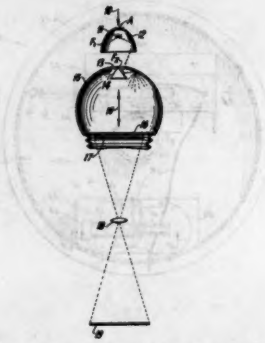
3,561,867

ILLUMINATING SYSTEM FOR PHOTOGRAPHIC PRINTERS AND ENLARGERS

Alfred Simmon, New York, N.Y., assignor to Berkey Photo, Inc., Woodside, N.Y.

Filed Dec. 20, 1968, Ser. No. 785,714
Int. Cl. G03b *27/54*
U.S. Cl. 355—67 **18 Claims**

An illuminating system for photographic printers and enlargers includes a single source of light, a light collector and a light integrator. The light integrator has a relatively small entrance window and a relatively larger light exit window. The single source of light, the light collector, an aperture reducer, in the form of an inverted, truncated cone or polygonal pyramid of clear transparent material with an index of refraction larger than unity, and a light distributor, in the form of a polygonal pyramid or preferably a cone, with a specularly reflecting exterior surface, are positioned on a common axis passing



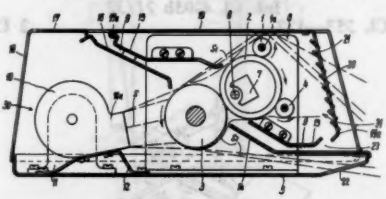
through the center of the light entrance window and the light exit window of the integrator, which is in the form of a modified hollow sphere having a diffusely reflecting interior surface. The aperture reducer greatly reduces the required size of the light entrance window of the light integrator, and the light distributor provides for the same light integration effect to be obtained with a single light source as hitherto obtainable with two light sources.

3,561,868

COOLING ARRANGEMENT FOR A COPYING MACHINE

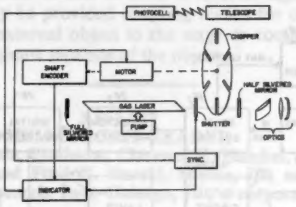
Gerhard Ritzerfeld, Schorlemer Allee 14, Berlin 33, Germany

Filed Apr. 1, 1968, Ser. No. 717,744
Claims priority, application Germany, Apr. 7, 1967, R 45,703
Int. Cl. G03b *27/10*
U.S. Cl. 355—110 **11 Claims**



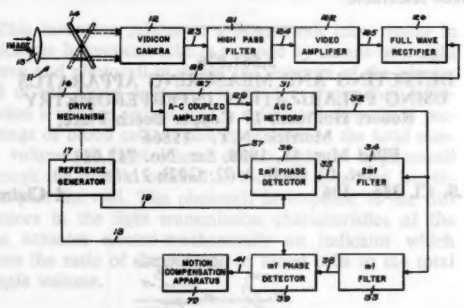
A thermo copier has a transparent tubular roller cooperating with a counterpressure roller. A source of infrared radiation in the interior of the transparent roller heats sheets passing between the rollers, and also the rollers. A blower discharges an airstream against the counterpressure roller by which the airstream is divided into two cooling airstreams flowing transversely to the axes of the rollers above and below the same and being discharged through separate outlet openings.

3,561,869
LIDAR WITH AUTOMATIC SCANNER HAVING FIXED OPTICS
Charles M. Cason III, and James F. Perkins, Huntsville, Ala., assignors to the United States of America as represented by the Secretary of the Army
Filed Jan. 22, 1969, Ser. No. 792,913
Int. Cl. G01c 3/08
U.S. Cl. 356—4 8 Claims



A lidar (light direction and ranging) system using a gas laser as the light source is shown. The cross-sectional area of the laser is scanned by a narrow slit on a chopper wheel. The particular volume of the laser defined by the slit lases and the resulting light falls on a wide-angle cylindrical lens. The lens causes the light to be deflected from the axis of the laser in accordance with the position of the slit.

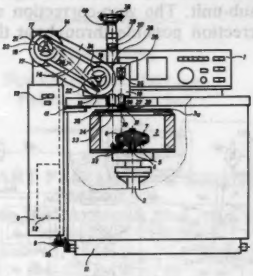
3,561,870
IMAGE MOTION DETECTION SYSTEM
Donald C. Redpath, Winchester, Mass., assignor to Itek Corporation, Lexington, Mass., a corporation of Delaware
Filed Dec. 18, 1967, Ser. No. 691,472
Int. Cl. G01p 3/36
U.S. Cl. 356—28 23 Claims



An image motion detection system in which an optical image of an observed object is velocity modulated at a given fundamental frequency on the target of a light integrating device such as that present in a vidicon camera. The high frequency video output of the vidicon camera is filtered at the fundamental frequency and compared to the modulation phase to produce an output representing both the magnitude and sense of relative movement existing between the observed object and the system.

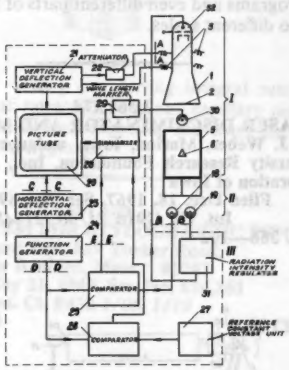
3,561,871
ULTRACENTRIFUGE FOR ANALYTICAL PURPOSES
Hans Beutelspacher, Braunschweig, Germany, assignor to Heraeus-Christ G.m.b.H., Osterode, Harz, Germany
Filed May 13, 1968, Ser. No. 728,538
Claims priority, application Germany, May 17, 1967, C 42,364
Int. Cl. G01n 21/00, 21/06
U.S. Cl. 356—72 3 Claims

An ultracentrifuge which is provided with an optical system with a very short beam path for carrying out analytical observations. This optical system takes up a very small space and may be designed as a separate unit which



may be attached to a normal ultracentrifuge which only requires simple alterations for the additional analytical purposes.

3,561,872
ELECTRONIC SPECTROPHOTOMETER
Zbigniew Ryszard Grabowski and Jozef Koszewski, Warsaw, Poland, assignors to Polska Akademia Nauk, Warsaw, Poland
Filed Feb. 14, 1966, Ser. No. 527,251
Claims priority, application Poland, Feb. 22, 1965, P 107,569
Int. Cl. G01j 3/42
U.S. Cl. 356—83 7 Claims

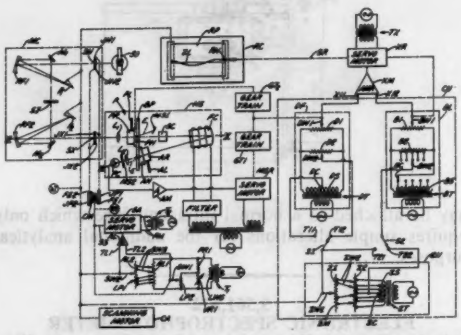


An electronic spectrophotometer comprises a movable light source in front of a luminous spot on a phosphor screen of a cathode-ray tube and a beam splitter which splits a radiation beam at an exit of a monochromator into a test beam and a reference beam, a photoelectric detector of the test beam being coupled through a negative feedback circuit to the electric gun of the cathode ray tube so that the output of the detector is at a constant level independent of the wavelength of the radiation impinging on the detector so that a second detector in the path of the test beam which passes through a sample has an output directly proportional to the transmittance of the sample.

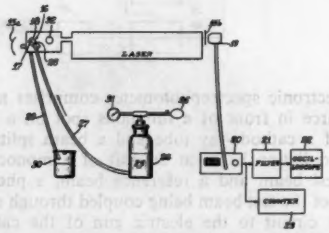
3,561,873
RECORDING SPECTROPOLARIMETER WITH ZERO-LEVEL COMPENSATOR
Paige B. Hooper, Glendora, Calif., assignor, by mesne assignments, to Cary Instruments, Monrovia, Calif., a corporation of California
Filed Mar. 2, 1964, Ser. No. 348,347
Int. Cl. G01j 3/00; G01n 21/44
U.S. Cl. 356—96 6 Claims

A spectropolarimeter having a control unit for substantially eliminating errors that would otherwise occur in

the measurement from one wavelength to another and from one specimen to another. The control unit includes a zero-correction sub-unit, a deflection signal sub-unit and a balancing sub-unit. The zero-correction sub-unit makes such zero-correction possible throughout the entire spectrum. The balancing sub-unit makes it possible to shift the zero level to facilitate recording on an enlarged scale the significant data of a spectropolarogram. The balancing sub-unit also makes it possible to record different spectropolarograms and even different parts of the same polarogram to different scales.

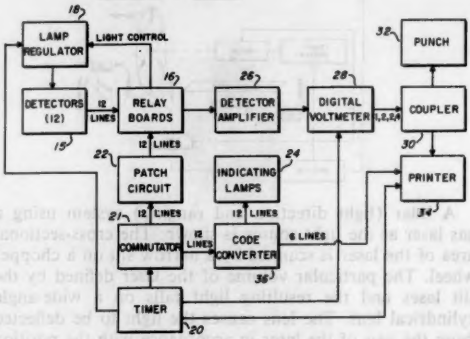


3,561,874
LASER DISCRIMINATOR AND METHOD
Robert J. Weber, Marion, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa, a corporation of Iowa
Filed Dec. 18, 1967, Ser. No. 691,312
Int. Cl. G01n *21/00, 21/48*
U.S. Cl. 356—102 **7 Claims**



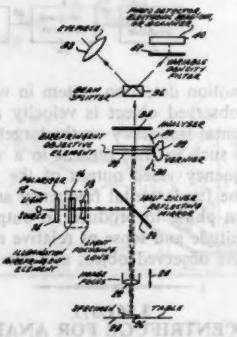
A laser is used to determine the size of small particles or other objects. The particles are introduced into the electromagnetic cavity of the laser in an aqueous medium flowing through a channel which intersects with the laser beam. The channel is defined in a quartz housing, and it is oriented relative to the adjacent quartz windows at the Brewster angle to insure complete transmission of the light. A light power meter monitors the laser output and converts it to an electrical signal representative of the intensity of the laser beam. As incident light strikes the particles, the total scatter will depend upon the size of the particles, and a change will be reflected in the laser output due to the gain characteristics of the laser. The change in laser power bears a one-to-one correlation with particle scattering cross section.

3,561,875
TURBIDIMETER
Louis Ried, Jr., and Charles A. Springer, Boulder, Colo., assignors to Ball Brothers Research Corporation, Boulder, Colo., a corporation of Colorado
Filed Apr. 27, 1967, Ser. No. 634,384
Int. Cl. G01n *21/00*
U.S. Cl. 356—103 **7 Claims**



An electro-optical device capable of sequentially testing a predetermined plurality of solutions for particle presence at preselected intervals. Particle presence is indicated by developing a current when light passing through the solution under test is scattered by particles in the solution. Control for the device is provided by timing circuitry wherein the timing interval, as well as the total number of samples to be sequentially tested, are made selectable.

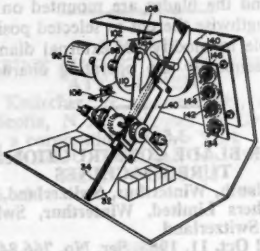
3,561,876
DETECTING AND MEASURING APPARATUS USING POLARIZATION INTERFEROMETRY
Robert Hoffman, 17 Copper Beech Place, Merrick, N.Y. 11566
Filed Mar. 11, 1968, Ser. No. 712,011
Int. Cl. G01b *9/02*; G02b *21/06*
U.S. Cl. 356—106 **1 Claim**



A detecting and measuring system using polarization interference optics comprising a source of polarized coherent illumination, an object in the coherent light field, an objective focusing lens system and a birefringent element or elements for splitting and displacing light rays. Means are provided for altering compensation by changing position of birefringent element or by changing the

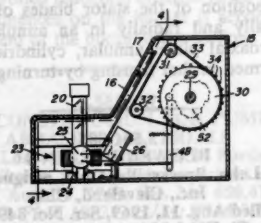
angle of coherent light source. Analyser means are provided for causing interference of displaced light rays as is a photo detector means for electrically indicating the minute changes in light intensity that result from the interfering light rays. Beam splitting means are provided for directing interfering rays from the analyser to the photo detector and/or to an eye piece. Variable density filter means are placed between the analyser means and the photo detector means to control level of light intensity. There may be provided coupling means for coupling motion of an external object to the stage or compensator for detecting minute motions of the object.

3,561,877
HEMATOCRIT READER
Pershing Nakada, Elmhurst, Clarence H. Hambel, Clarendon Hills, and Fred K. Suzuki, Skokie, Ill., assignors to Delta Research, Inc., Chicago, Ill., a corporation of Illinois
Filed June 30, 1967, Ser. No. 650,267
Int. Cl. G01b *11/22*; G01f *23/00*; G01n *21/24*
U.S. Cl. 356—158 26 Claims



This invention relates to a hematocrit tube reader in which the hematocrit tube is scanned by means of a light source and photocell to detect the volumes of the plasma and of the blood cells and to produce from that information a voltage output that is calibrated directly in percentage of blood cell volume in relation to the total sample volume. A light source directs light at a photocell through the tube to be read as the tube is moved lengthwise past the cell. The photocell in response to the differences in the light transmission characteristics of the tube actuates electro-mechanically an indicator which shows the ratio of the volume of blood cells to the total sample volume.

3,561,878
DIRECT READING COLORIMETER
Raymond W. Kiess, Miami, Fla., assignor to Kiess Instruments, Inc., Miami, Fla., a corporation of Florida
Filed Dec. 21, 1967, Ser. No. 692,525
Int. Cl. G01j *1/42*, *3/48*
U.S. Cl. 356—184 12 Claims



A direct reading colorimeter for chemical analysis is provided with a plurality of meter scales and a plurality of color filters with interlocking means for automatically selecting the scale and filter appropriate to the specific analysis to be performed.

ERRATUM

For Class 356—205 see:
Patent No. 3,561,845

3,561,879
CAPILLARY PASSAGE INK REMOVER FOR VENT
Edward Bok, 1011 Arlington Blvd., Apt. 816W, Arlington, Va. 22209
Filed Feb. 13, 1969, Ser. No. 798,963
Int. Cl. B43k *1/10*
U.S. Cl. 401—258 9 Claims

A stylographic writing pen having integral reservoir with extendible and retractible vent and capillary passage adapted to the removal of deposited ink from the vent opening and vent valve, per se.

3,561,880
VENT SYSTEM FOR STYLOGRAPHIC PEN
Edward Bok, 819 Tucker Road, New Bedford, Mass. 02747
Filed May 21, 1969, Ser. No. 826,361
Int. Cl. B43k *1/06*, *1/10*
U.S. Cl. 401—258 14 Claims

Stylographic drafting or writing pen of the type having an ink reservoir with a venting hole in the top of said reservoir and a cleaning wire reciprocably extensible through a tubular writing point, particularly a vent stem with vent valve portion protruding through said venting hole so as to provide a vent and improved ink carrying off system, inside the reservoir, beneath said venting hole.

3,561,881
STYLOGRAPHIC PEN WITH THE CAPILLARY PASSAGE CLEANING MEANS OPERABLE BY HAND OR BY SHAKING OR CONTACT

Edward Bok, 819 Tucker Road,
New Bedford, Mass. 02747

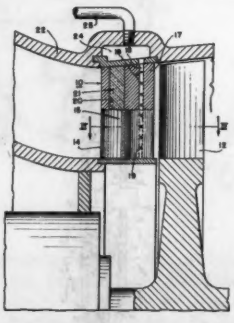
Filed May 7, 1969, Ser. No. 828,415
Int. Cl. B43k *1/10*
U.S. Cl. 401—258 14 Claims

A stylographic writing pen having a longitudinally displaceable wire in the capillary passage of its pen stylus whereby in rest position this wire protrudes through the pen tip bottom and either by hand or by longitudinally shaking of the pen or by resting of the pen tip on the writing surface, the wire can be more or less retracted into the ink passageway.

3,561,882
TURBINE BLADE COOLING

Edward V. Somers and Edward Burke, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania

Filed July 15, 1952, Ser. No. 298,947
Int. Cl. F01d *5/08, 5/18*
U.S. Cl. 415—115 3 Claims

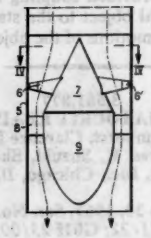


1. In gas turbine blade cooling, a row of nozzle blades followed by a row of moving blades; the tail portions of the nozzle blades having longitudinal passages formed therein, adapted to be supplied with liquid and having ports through which liquid may sprayed into the nozzle passages from the tail portion passages; and each of said nozzle blades being hollow between the inlet edge thereof and the tail portion to reduce the heat conductive area between the inlet edge and the tail portion.

3,561,883
BLOWERS

Paul Berry, 23 Avenue de Saint-Maur,
59 La Madeleine (Nord), France

Filed Dec. 2, 1968, Ser. No. 780,525
Claims priority, application France, Dec. 12, 1967, 131,823
Int. Cl. F04d *19/00, 27/00, 29/26*
U.S. Cl. 415—131 4 Claims

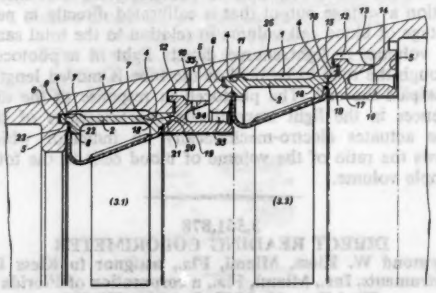


The rotor for a blower comprises a hub of varying cross-section and the blades are mounted on the hub to be movable lengthwise thereof to selected positions which make it possible to modify the external diameter of the helix and consequently the operating characteristics of the blower.

3,561,884
STATOR BLADE CONSTRUCTION FOR TURBOMACHINES

Ferdinand Zerlauth, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland, a company of Switzerland

Filed Oct. 11, 1968, Ser. No. 766,846
Claims priority, application Switzerland, Mar. 22, 1968, 4,330/68
Int. Cl. F01d *1/02, 1/04*
U.S. Cl. 415—218 1 Claim



There is disclosed a stator blade construction for turbomachines (e.g. turbines, or pumps or compressors) in which the position of the stator blades of each stage is defined axially and radially in an annular housing by means of coaxial plane annular, cylindrical, or conical surfaces formed in that housing by turning or boring operations.

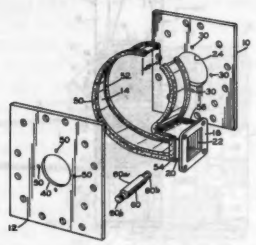
3,561,885
BLOWER HOUSING

Charles R. Lake, Brecksville, Ohio, assignor to Pyronics, Inc., Cleveland, Ohio

Filed Aug. 11, 1969, Ser. No. 849,116
Int. Cl. F01d *25/24;* F04d *17/08, 29/40*
U.S. Cl. 415—219 5 Claims

A radial flow blower housing comprising flat, rectangular side plates positioned on opposite sides of a scroll

forming member. The scroll forming member is made from an elongated strip of metal curved into the required shape. The side plates are clamped to the scroll forming member by transversely extending bolts or studs which are



arranged to position the scroll forming member. Additionally, the edges of the scroll forming member are provided with resilient, U-shaped gaskets which engage the side plates to form an airtight seal.

3,561,886
TURBINE BUCKET EROSION SHIELD ATTACHMENT

Charles H. Kreischer, Jr., Schenectady, and Victor S. Musick, Scotia, N.Y., assignors to General Electric Company, a corporation of New York

Filed Feb. 7, 1969, Ser. No. 797,459
Int. Cl. F01d *5/28*
U.S. Cl. 416—224 **5 Claims**

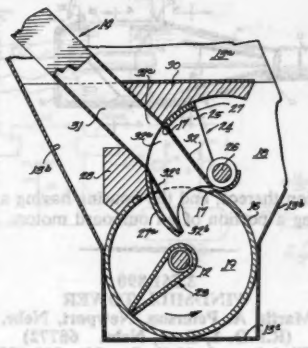
An erosion resistant shield is attached to the leading edge of a steam turbine bucket at the radially outer portion thereof by means of an intermediate shim using selected materials to provide a ductile composite welded structure. Controlled reduction of stress at the point where the shield commences on the bucket is accomplished by local enlargement of the bucket cross section.

3,561,887
PUMP CONSTRUCTION FOR PUMPING ABRASIVE MATERIALS

Leo C. Reeve, Lombard, Ill., assignor to Portland Cement Association, Skokie, Ill., an unincorporated association

Filed Aug. 15, 1969, Ser. No. 850,413
Int. Cl. F04b *19/22, 23/14;* F04d *3/02*
U.S. Cl. 417—203 **20 Claims**

A pump is provided which is capable of handling abrasive plastic materials such as wet concrete. The pump includes a housing having a product inlet port and a product discharge port; and an impeller rotatably mounted within said housing. One wall of the housing has formed therein the inlet port and is mounted for rotation as a unit with the impeller. Disposed outside

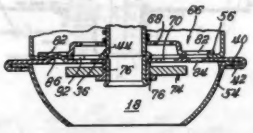


the housing and mounted for rotation as a unit with the impeller and the housing one wall is a product feed means. The feed means, when rotating, is adapted to urge the product towards the inlet port.

3,561,888
PERCOLATOR PUMP

Denis J. Jordan, Eau Claire, Wis., assignor to National Presto Industries, Inc., Eau Claire, Wis., a corporation of Wisconsin

Filed July 15, 1969, Ser. No. 841,768
Int. Cl. F04f *1/18*
U.S. Cl. 417—209 **11 Claims**



A liquid pump for use in a percolator appliance which pump is mounted on the lowermost end of a hollow stem adapted to fit in the liquid container of the percolator such that the pump seats over a well in the bottom wall of the container in thermal association with a heater assembly and thereby defines a pump well chamber. The liquid pump is designed to pump the liquid in the well of the container up the hollow stem where it falls onto and through a coffee basket supported near the upper end of the stem. A by-pass passageway interconnects the pump well chamber and the liquid container, which passageway may selectively be partially or completely opened to prevent a selected portion of the liquid passing into the chamber from being fed up the stem and through the coffee basket, thereby controlling the strength of the brew.

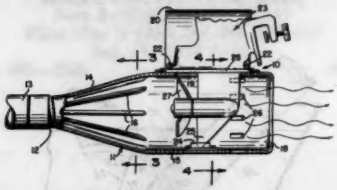
3,561,889
OUTBOARD MOTOR PUMP

Clifford Aubrey Bellamy, Lobby 5, Securities Bldg., 3rd and Stewart Sts., Seattle, Wash. 98101

Filed Apr. 21, 1969, Ser. No. 817,929
Int. Cl. F04d *13/02*
U.S. Cl. 417—237 **1 Claim**

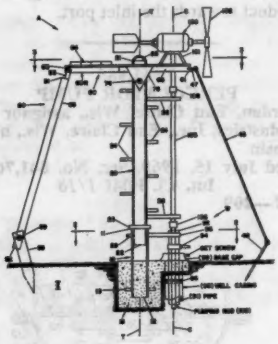
A pump unit that utilizes a conventional outboard motor as the power source so that a liquid or fluid such

as water can be pumped from one location to another, there being a housing having a shoe or member in the



lower portion thereof, and the housing having an opening for receiving a portion of an outboard motor.

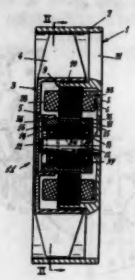
3,561,890
WINDMILL TOWER
Martin A. Peterson, Newport, Nebr. (R.F.D. 1, Rose, Nebr. 68772)
Filed June 5, 1969, Ser. No. 830,675
Int. Cl. F04b *17/00*
U.S. Cl. 417—336 **10 Claims**



An exceedingly stable windmill tower adapted for ease of installation and operation. The stable windmill tower is especially adapted for normally required well servicing operations including, but not limited to, removing the windmill from overlying relationship to the concentric well casing, well pipe, and the pumping rod, by rotating the windmill tower about its vertical axis from ground level by the operator.

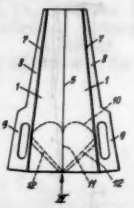
3,561,891
AXIAL FANS, ESPECIALLY FOR ELECTRONIC APPLICATIONS
Henri Saint-Amand, Neuilley-sur-Seine, France, assignor to Etudes Techniques et Representations Industrielles, a company
Filed Mar. 14, 1969, Ser. No. 807,221
Claims priority, application France, Mar. 29, 1968, 146,329
Int. Cl. F04d *25/06*
U.S. Cl. 417—353 **8 Claims**

An electric axial fan of the flat type intended primarily for cooling electrical appliances and comprising a casing within which the fan impeller is rotatably mounted and which carries the stator of a squirrel-cage induction motor and a forcibly inserted shaft for supporting by means of ball-bearings the rotor of the motor which drives the fan impeller. The rotor cage is provided on each side of its magnetic circuit with two laterally projecting short-circuit



collars and the ball-bearings are fitted between said collars and the shaft of the fan casing.

3,561,892
ACCELERATING DEVICE FOR GASEOUS AND LIQUID MEDIA
Werner Achermann and Franz Achermann, both of Rumlangstrasse 7, Zurich, Switzerland
Filed Feb. 13, 1969, Ser. No. 798,966
Claims priority, application Switzerland, Feb. 16, 1968, 2,692/68
Int. Cl. F01b *19/00*; F04b *39/10*; F16j *3/00*
U.S. Cl. 417—566 **12 Claims**

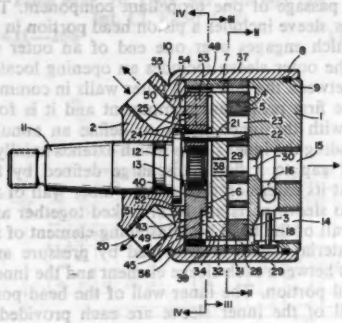


A device having a hollow pressure member including four side segments which form a pressure chamber having a parallelogram shape and cross section is provided for accelerating a fluid medium. Each of the side segments is articulated with respect to the segments adjacent thereto, thereby forming a collapsible and expandable pressure chamber. Means are provided to move the articulated side segments with respect to each other for causing the movement of the fluid medium into and out of the pressure chamber. A diaphragm means is disposed within the chamber and extends across at least a portion of the cross section of the pressure chamber.

3,561,893
HYDROSTATIC CONTROL EQUIPMENT, PARTICULARLY FOR STEERING SYSTEMS
Johannes Vagn Battrup, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark, a company of Denmark
Filed Nov. 19, 1968, Ser. No. 777,054
Claims priority, application Germany, Dec. 14, 1967, D 54,842
Int. Cl. B62d *5/08*; F01c *1/10*
U.S. Cl. 418—61 **1 Claim**

The invention relates to a hydrostatic control unit of the general type used for vehicle steering systems. A

gerotor gear set is used for the metering unit and a pair of plate type valves are cooperable with the gerotor unit. A drive assembly is provided between the gerotor unit and the valves which functions as a drive between the gerotor and one of the valves and as a means for providing limited relative rotational movement between the valves for control purposes.



3,561,894

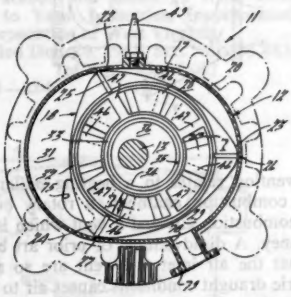
INTAKE CHARGE COOLING SYSTEM FOR ROTARY MACHINE

Robert W. King, Sidney, Ohio, assignor to Copeland Refrigeration Corporation, a corporation of Michigan

Filed Apr. 7, 1969, Ser. No. 813,881

Int. Cl. F02b 55/06

U.S. Cl. 418—86 5 Claims



An air cooled rotary piston internal combustion engine. A portion of the engine cooling is effected by passing the induction charge through a hollow, vaned rotor before induction into the combustion portion of the engine.

3,561,895

CONTROL OF FUEL GAS COMBUSTION PROPERTIES IN INSPIRATING BURNERS

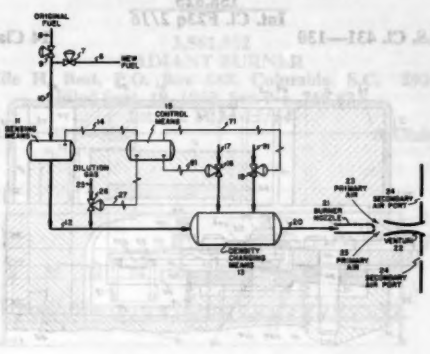
Herbert D. Michelson, New York, N.Y., assignor to Esso Research and Engineering Company, a corporation of Delaware

Filed June 2, 1969, Ser. No. 829,424

Int. Cl. F23k 5/00

U.S. Cl. 431—11 19 Claims

Inspirated air in inspirating type burners is maintained constant at a given level of firing even though one fuel may be changed for another by maintaining the momentum flow of fuel through the burner at a substantially constant level, the constant momentum flow being maintained by heating or cooling the fuel in response to the density variation of a new fuel in relation to the density of the original fuel, and supplementally by adding enriching or diluting gases to the new fuel.



3,561,896

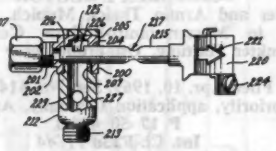
PILOT BURNER CONTROL SYSTEM FOR A DOUBLE BURNER OVEN OR THE LIKE AND METHOD OF OPERATING THE SAME

Fred Riehl, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va., a corporation of Delaware

Filed Jan. 14, 1969, Ser. No. 791,009

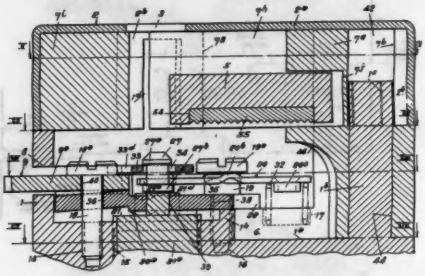
Int. Cl. F23n

U.S. Cl. 431—12 28 Claims



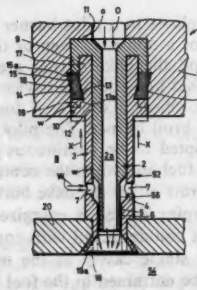
This disclosure relates to a pilot burner control system for a broil burner of a domestic oven or the like wherein the broil burner and the bake burner are disposed in a single oven cavity that has a control device that is adapted to selectively interconnect a source of fuel to either the bake burner or the broil burner. The pilot burner for the broil burner is adapted to be continuously supplied fuel from the source of fuel and when the control device is set in a position to operate either the bake burner or the broil burner, an air pumping device is energized to force primary air that is not contaminated with combustion products created in the single cavity of the oven directly to the pilot burner to be entrained in the fuel flowing thereto so as to insure that flame means will always exist at the pilot burner means for the broil burner and will not be snuffed out by combustion products during the use of the oven.

3,561,897
GAS-FUELED LIGHTERS
Robert Raymond Hocq, Boulogne-Billancourt, France, assignor to Societe Franco-Hispano-Americaine FRANCISPAM, Paris, France, a French corporation
Filed July 8, 1969, Ser. No. 839,966
Claims priority, application France, July 10, 1968, 158,625
Int. Cl. F23q 2/16
U.S. Cl. 431—130 14 Claims



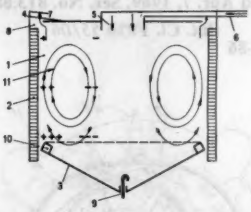
A gas fueled lighter in which the casing is divided internally into two parts which are separated by a horizontal partition, the bottom part acting as a reservoir for liquid gas and the top part accommodating the operating mechanism which is arranged to be operated by the thumb of a user. The operating mechanism is carried by a lever platform which can be separated en bloc from the casing, and comprises two superimposed parts connected together at one end. The upper part has projecting tongues which position it in the casing and the bottom part acts as an operating lever and has bores in it designed to take the spindles of the lever platform, a flint, and the spindle of the flintwheel, and also has a recess for a flint thrust spring and contains a cam surface which cooperates with a corresponding surface on a valve opening lever.

3,561,898
FORM LOCKING MOUNTING FOR COMBUSTION CHAMBER INJECTOR
Karl Butter and Armin Theiss, Munich, Germany, assignors to Messerschmitt-Bolkow Gesellschaft mit beschrankter Haftung, Ottobrunn, near Munich, Germany
Filed Apr. 10, 1969, Ser. No. 814,943
Claims priority, application Germany, Apr. 27, 1968, P 17 50 404.0
Int. Cl. F23d 11/44
U.S. Cl. 431—167 7 Claims



A liquid fuel combustion device includes a combustion chamber injection head of double wall construction with the space between an inner and outer wall forming a conduit for a propellant component. Mounted within the head in a position to span a portion of the inner wall and the outer wall is an injector which comprises an inner cylindrical portion or sleeve having a bore therethrough for the passage of one propellant component. The injector inner sleeve includes a piston head portion in the outer wall which engages over one end of an outer sleeve or tube. The outer sleeve includes an opening located in the space between the inner and outer walls in communication with the first propellant component and it is formed together with the inner sleeve to define an annular space surrounding the inner sleeve which extends axially through a small gap to a flared discharge defined by the outer sleeve at its extension through the inner wall of the head. The two sleeve parts are form-locked together and to the outer wall of the head by a fastening element of relatively soft material which is deformed by pressure and which engages between each sleeve element and the inner wall of the head portion. The inner wall of the head portion and the wall of the inner sleeve are each provided with an annular recess for receiving the deformed material of the fastening element.

3,561,899
HEATING BOILER
Hans O. Lerris, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark, a company of Denmark
Filed Mar. 25, 1968, Ser. No. 715,685
Int. Cl. F23d 11/04
U.S. Cl. 431—168 8 Claims



The invention relates to a heating boiler of the type having a combustion chamber, a rotary burner, an air inlet for combustion air, and a vent which is connectable to a chimney. A disadvantage of prior art boilers of this type is that the air inlet and vent are so arranged that atmospheric draught conditions causes air to flow through the combustion chamber proper during times when the burner is not operating and thereby causes cooling of the walls of the boiler. This air either flows from the chimney through the combustion chamber to the air inlet pipe, or vice versa.

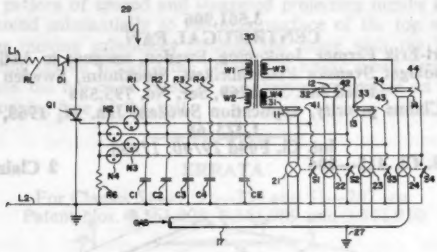
The invention involves an arrangement between the air inlet pipe and the chimney vent so that the moving air is shunted from one of these elements to the other across the upper part of the combustion chamber when the burner is not operating. This causes the air to bypass the combustion chamber proper and the air thus does not come into cooling contact with the combustion chamber wall except for the upper portion thereof.

When the unit is operating the rotary burner causes a circulatory movement of the air which causes the relatively cool inlet air to be drawn downwardly to the rotary burner through the center of the combustion chamber away from the boiler wall, and causes the hot combustion gases to flow upwardly in contact with the burner wall to the chimney vent.

3,561,900
IGNITER SYSTEM

Lyman H. Walbridge, Ashland, Mass., assignor to Fenwal Incorporated, Ashland, Mass., a corporation of Massachusetts

Filed Mar. 10, 1969, Ser. No. 805,719
Int. Cl. F23q 3/00
U.S. Cl. 431—256 11 Claims

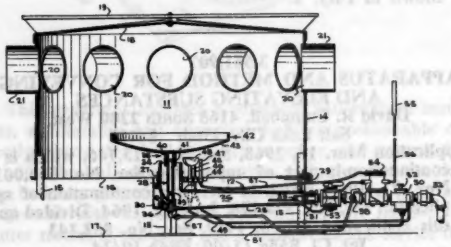


The electronic igniter system disclosed herein employs a high voltage spark generating circuit which is adapted to provide igniting sparks to a plurality of burners when any one of the burners is turned on, but not lit. The spark generating circuit can be triggered into operation by any one of a plurality of triggering circuits, there being one triggering circuit for each burner. Associated with each triggering circuit is a means for disabling that triggering circuit when the respective burner is either turned off or is lit.

3,561,901
HEATING APPARATUS

Walter F. Jackson and James F. Wise, Clinton, N.C., assignors to Vann Industries, Incorporated, Clinton, N.C., a corporation of West Virginia

Filed Dec. 20, 1968, Ser. No. 785,483
Int. Cl. F23m 9/00
U.S. Cl. 431—284 16 Claims

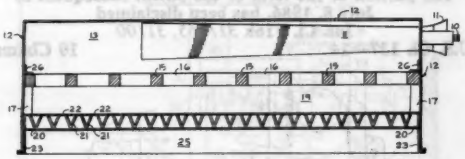


A heating apparatus including enclosure means defining a combustion chamber, means for distributing heated air from said combustion chamber, and a burner unit disposed in said combustion chamber comprising a first venturi having an inlet port and an outlet port partially defining a combustion zone, the first venturi having at least one primary air intake port, a first fuel supply line communicating with the inlet port of the first venturi, a second venturi mounted on the first venturi having an inlet port and at least one outlet port communicating with the combustion zone, the second venturi having at least one primary air intake port directly communicating with the interior of the first venturi, a second fuel supply line communicating with the inlet port of the second venturi, and the first venturi having a larger capacity than the second venturi whereby the second venturi may be operated to provide a low firing rate and the first venturi may be operated with or without the second venturi to provide higher firing rates.

3,561,902
RADIANT BURNER

Willie H. Best, P.O. Box 868, Columbia, S.C. 29202

Filed Sept. 19, 1968, Ser. No. 760,831
Int. Cl. F23d 13/14
U.S. Cl. 431—328 5 Claims

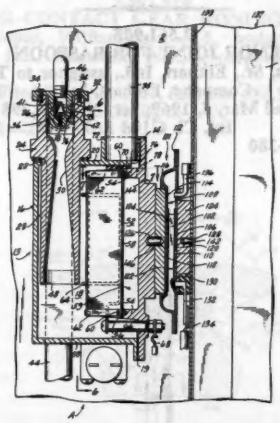


A radiant burner composed of a housing, a gas orifice, a venturi, a plenum, a separating plate with ports therein, a combustion chamber, radiant elements and exhaust openings.

3,561,903
BURNER CHAMBER UNIT FOR A THERMOELECTRIC GENERATOR OR THE LIKE

Martin A. Rubinstein, Morrisville, Pa., and Charles Teleki, West Orange, N.J., assignors to General Instrument Corporation, a corporation of Delaware

Original application Sept. 20, 1965, Ser. No. 488,483. Divided and this application July 7, 1969, Ser. No. 870,225
Int. Cl. F23d 13/00
U.S. Cl. 431—350 5 Claims



A thermoelectric generating assembly has a combustion chamber unit in which the space through which the fuel end products of combustion pass includes a plurality of spaced heat-conducting elements extending to the chamber wall and defining fluid communication spaces therebetween, a gas-permeable combustion member being located in the chamber at least in part between those elements.

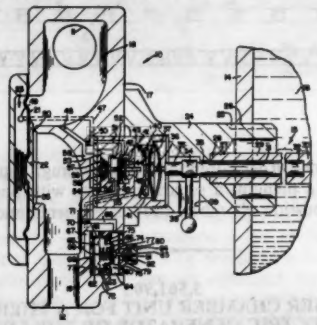
ERRATA

For Classes 84—380, 137—14, 415—206 and 417—53 see:
Patent Nos. 3,561,904 thru 3,561,907

3,561,904
PRESSURE CONTROL METHOD

Jay R. Katchka, Long Beach, Donald McAllister, Palos Verdes Estates, and Edward B. Scharer, Lynwood, Calif., assignors to Robertshaw Controls Company, Richmond, Va., a corporation of Delaware

Application July 31, 1967, Ser. No. 657,152, now Patent No. 3,454,038, dated July 8, 1969, which is a division of application Ser. No. 448,201, Apr. 14, 1965, now Patent No. 3,338,517. Divided and this application Nov. 26, 1968, Ser. No. 779,001
The portion of the term of the patent subsequent to July 8, 1986, has been disclaimed
Int. Cl. F16k *31/365, 31/00*
U.S. Cl. 137—14 10 Claims

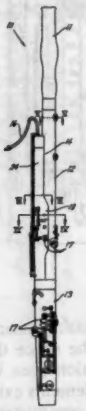


This disclosure relates to a control device for thermostatically supplying fuel to a burner means at one constant rate during normal demands on the burner means and for thermostatically supplying fuel to the burner means at an increased constant rate during abnormal demands on the burner means, the control device having its fuel flow rate changed by a two stage pressure sensing regulator that controls a main pressure operated valve member of the control.

3,561,905
TENOR JOINT FOR BASSOON

Roy J. Linton, Sr., Elkhart, Ind., assignor to The Linton Company, Elkhart, Ind.

Filed Mar. 5, 1969, Ser. No. 804,398
Int. Cl. G10d *7/00*
U.S. Cl. 84—380 2 Claims

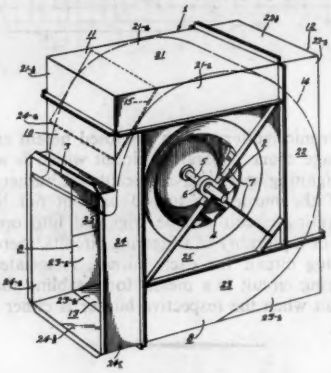


A method of making a tenor joint for a bassoon, said joint having a lengthwise bore and integral wing means extending along and projecting radially away from said base, said wing means having a plurality of spaced openings extending therethrough and into communication with the bore of the joint, said wing means also having a plurality of recesses in the side thereof between pairs of openings, the joint being produced by injection molding from a thermoplastic, such as acrylonitrile butadiene styrene, which is known as Cycolon.

3,561,906
CENTRIFUGAL FAN

Karl-Erik Fermér, Jonkoping, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Stockholm, Sweden

Filed Jan. 31, 1969, Ser. No. 795,585
Claims priority, application Sweden, Jan. 31, 1968, 1,323/68
Int. Cl. F04d *29/40, 17/08*
U.S. Cl. 415—206 2 Claims

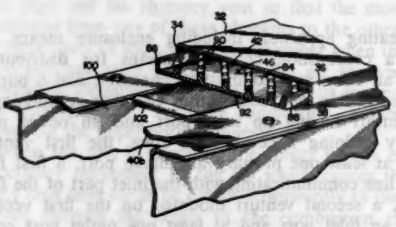


A casing for a centrifugal fan comprising a hollow box structure having square corners, one end wall having an exhaust opening at one corner and an angularly disposed shielding plate at the other corner. The fan wheel axis is offset from the center of the box toward said shielding plate. The casing is preferably formed by four uniform-sized box-shaped elements which are abutted and joined as shown in FIG. 1.

3,561,907
APPARATUS AND METHOD FOR CONVEYING AND ELEVATING SUBSTANCES

David R. Campbell, 4165 South 2200 West, Salt Lake City, Utah 84120

Application Mar. 18, 1968, Ser. No. 713,746, which is a continuation-in-part of application Ser. No. 596,003, Nov. 21, 1966, which in turn is a continuation of application Ser. No. 374,778, June 12, 1964. Divided and this application July 8, 1969, Ser. No. 852,143
Int. Cl. B65g *15/00;* F04b *19/14*
U.S. Cl. 417—53 2 Claims



A conveying arrangement wherein an endless belt has a working run that travels in an inclined chute having a

top wall and a substantially parallel bottom wall attached thereto by side walls with the bottom wall being discontinuous and interrupted by cut-out portions, the belt having a bearing face slidably disposed on the bottom wall and closing off the cut-out portions so as to complement the top and side walls in achieving a conduit effect in which the working run travels. The belt has a working face provided on its opposite sides with upstanding endless flanges and, intermediate the side flanges, with a pattern of spaced and staggered projecting numbs that extend substantially to the undersurface of the top wall for moving substances through the chute with the belt being driven through the chute at a linear speed greater than the fall back speed of a conveyed substance on the working face of the belt.

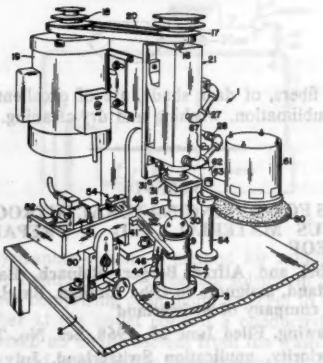
ERRATA

For Classes 51—5, 51—239 and 51—287 see:
Patent Nos. 3,561,908, 3,561,909 and 3,561,910

3,561,908
GOLF BALL TRIMMING APPARATUS

Nyles V. Reinfeld, 610 Treeside Ave., Akron, Ohio 44313

Filed Apr. 10, 1968, Ser. No. 720,020
Int. Cl. B24b *7/04*
U.S. Cl. 51—5 11 Claims



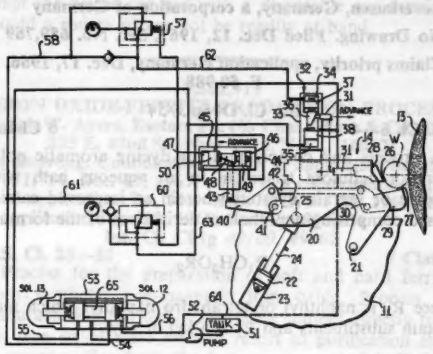
This apparatus includes a rotatable ball support member, a rotatable ball engaging member positionable directly above the ball support member and means for driving the ball engaging member. Other means position the ball engaging member for movement to and from engagement with the ball on the ball support member, a cutter means is provided and a support means carries the cutter means and is pivotally positioned so that control means connecting to the support means can move it to bring the cutter means into and out of engagement with the ball on the ball support member for trimming mold flash, or rind therefrom.

3,561,909
STEADY REST FOR GRINDER

William P. Flohr, Jr., Waynesboro, Pa., assignor to Litton Industries, Inc., Waynesboro, Pa., a corporation of Delaware

Filed Mar. 28, 1968, Ser. No. 716,716
Int. Cl. B24b *41/06*
U.S. Cl. 51—239 8 Claims

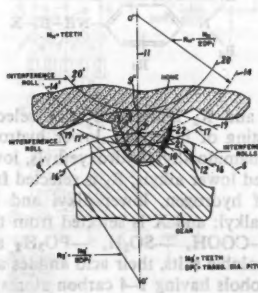
The apparatus of this disclosure relates to steady rest actuating means of the type which includes a pressure actuated floating wedge in engagement with the steady rest plunger. The wedge is shifted in one direction by a hydraulically actuated piston to advance the plunger against the workpiece. It is actuated in the opposite direction for resetting by another hydraulically operated piston. During the grinding operation, the piston is held against the wedge by pressure sufficient to prevent deflection of the work by the advance of the grinding wheel. As initially set up, when the plunger is in contact with the finished diameter on the workpiece, there is some clearance between the reset piston and the head of the cylinder. As the steady rest shoe wears, the actuating wedge will move farther to the right to advance the plunger to compensate for such wear. The clearance between the reset piston and the head of the cylinder permits the movement of the wedge for this compensation. The lower steady rest shoe is actuated in the same manner except a higher pressure is applied to the actuating piston to overcome any sag in the workpiece and to hold the workpiece in a vertical position best suited to maintain roundness of the workpiece.



3,561,910
ROLLING CONTACT GEAR HONING METHOD

Guy E. Soper, Williamsport, Md., assignor to Mack Trucks, Inc., Montvale, N.J., a corporation of New York

Filed Nov. 30, 1967, Ser. No. 686,992
Int. Cl. B24b *1/00*
U.S. Cl. 51—287 2 Claims



Honing rolling contact gear members having concave tooth profile shapes wherein a hone tooth shape is designed to operate with said gear member without tooth interference as the hone changes its tooth and diameter sizes due to operational wear.

CHEMICAL

3,561,911

PROCESS FOR THE DYEING OF SHAPED ARTICLES MADE OF AROMATIC POLYESTERS OF CELLULOSE TRIACETATE

Karl Fuhr and Hans Rudolph, Krefeld-Bockum, Ernst-Robert Fritze and Otto Schneider, Cologne-Flittard, and Walter Hees, Cologne-Hohenberg, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany, a corporation of Germany

No Drawing. Filed Dec. 12, 1967, Ser. No. 689,769

Claims priority, application Germany, Dec. 17, 1966, F 50,988

Int. Cl. D06p *3/54*

U.S. Cl. 8—4 **6 Claims**

A process and composition for dyeing aromatic polyesters or cellulose triacetate in an aqueous bath with disperse or ingrain dyestuff wherein an improved carrier is used comprising naphthalene derivatives of the formula

$$R_1CH_2OR_2$$

where R_1 is naphthyl or tetrahydro naphthyl which may contain substituents and R_2 is alkyl or acyl.

3,561,912

OXIDATION DYES COMPRISING AROMATIC DIAMINES AND COUPLING COMPONENTS

Karl-Josef Boosen, Dusseldorf-Holthausen, and Peter Berth, Dusseldorf-Benrath, Germany, assignors to Therachemie Chemisch Therapeutische Gesellschaft m.b.H., Dusseldorf, Germany

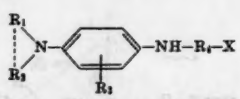
No Drawing. Filed Oct. 11, 1966, Ser. No. 585,779

Claims priority, application Germany, Oct. 30, 1965, T 29,697; Sept. 1, 1966, T 31,964

Int. Cl. A61k *7/12*

U.S. Cl. 8—10.2 **14 Claims**

A composition for treatment of human hair comprising a substantially 0.1 to 5.0 weight percent aqueous solution of a developer plus a coupling agent in quantities ranging from substantially equimolar to a slight excess of the developer; said developer having the formula



wherein R_1 and R_2 individually are selected from the group consisting of hydrogen, lower hydroxyalkyls, beta methyl sulfonamidoethyl, hydroxyethyls, lower alkyls and interconnected lower alkyls; R_3 is selected from the group consisting of hydrogen, lower alkyl and lower alkoxy; R_4 is lower alkyl; and X is selected from the group consisting of —COOH, —SO_3H, —PO_3H_2 and —PO_2H_2, their water soluble salts, their acid amides and esters with aliphatic alcohols having 1–4 carbon atoms; said coupling agent being selected from the group consisting of o- and m-phenylenediamine; o- and m-aminophenol; o- and m-toluylenediamine; o-anisidine; 2,4-diaminoanisole; 2,4-diaminophenol; pyrogallol; resorcinol; pyrocatechol; alpha-naphthol; aminoresorcinol; 1,5 - aminohydroxy-naphthalene; and 1,8-diaminohydroxynaphthalene; and a method for use thereof.

3,561,913

METHOD OF DYEING SYNTHETIC FIBERS

Hideaki Munakata, Kazuo Watanabe, Yoshikazu Arimatsu, and Toshiharu Sugihara, Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

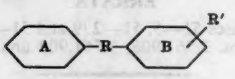
No Drawing. Filed Nov. 17, 1967, Ser. No. 683,827

Claims priority, application Japan, Nov. 25, 1966, 41/77,417; Dec. 28, 1966, 42/861

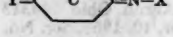
Int. Cl. D06p *1/32*

U.S. Cl. 8—32 **7 Claims**

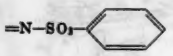
Synthetic fibers—especially polyester fibers, are dyed by means of a reaction product of a compound of the formula



and a compound of the formula



wherein A is an aromatic nucleus, B is an aromatic nucleus or a quinoid ring, R is —NH— or —N=, R′ is —OH or =O, C is a quinoid ring, X is a halogen atom and Y is =O, =N—X, =N—$OCCH_3$ or



The dyed fibers, of dark shade, are of excellent fastness to light, sublimation, washing and dry-cleaning.

3,561,914

PROCESS FOR DYEING NATURAL NITROGENOUS FIBROUS MATERIAL AND A PREPARATION THEREOF

Heinz Abel and Alfred Berger, Reinach, Basel-Land, Switzerland, assignors to Ciba Limited, Basel, Switzerland, a company of Switzerland

No Drawing. Filed June 25, 1968, Ser. No. 739,637

Claims priority, application Switzerland, July 7, 1967, 9,706/67

Int. Cl. D06p *3/14*

U.S. Cl. 8—43 **11 Claims**

A process for dyeing natural nitrogenous fibers with water-soluble 1:2 metal-complex dyestuffs wherein dyeing is performed at 70 to 85° C. in the presence of (a) a water soluble salt of tetraboric acid and (b) a nitrogen containing polyglycol derivative of an aliphatic compound of high molecular weight in the form of an acid ester of an at least dibasic oxygen acid or a salt thereof.

3,561,915

TEXTILE DYE ASSISTANT COMPOSITIONS

Ralph Matalon, 432 Cherry Hill Blvd., Cherry Hill, N.J. 08034

No Drawing. Continuation-in-part of application Ser. No. 555,678, June 7, 1966. This application Mar. 24, 1967, Ser. No. 625,589

Int. Cl. B01f *19/00*; C09b *67/00*; C11d *9/30*; D06p *1/68*

U.S. Cl. 8—84 **14 Claims**

Textile assistant containing an anionic polar dispersant, a nonpolar dispersant and an aromatic nonpolar swelling agent for hydrophobic fibers for dyeing with disperse and basic dyestuffs.

3,561,916

CELLULOSIC TEXTILE MATERIALS ARE CROSS-LINKED WITH N-METHYLOLACRYLAMIDE USING ONE CATALYST AND A SINGLE REACTION STEP

William Frederick Baitinger, Hillsborough Township, Somerset County, N.J., assignor to American Cyanamid Company, Stamford, Conn., a corporation of Maine

No Drawing. Filed Sept. 7, 1967, Ser. No. 665,966
Int. Cl. D06m *9/00, 13/40*
U.S. Cl. 8—116.3 9 Claims

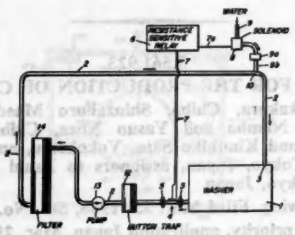
A method for imparting a durable press finish to cellulosic textile materials by treating with N-methylolacrylamide and zinc nitrate and heating to cure and effect cross-linking, the textile finish for performing the method and the resulting cellulosic textile material.

3,561,917

METHOD FOR DETECTING RELATIVE HUMIDITY OF DRYCLEANING SOLVENTS

Edwin B. Michaels, Stamford, Clayton A. Wetmore, Norwalk, and Thomas N. Murphy, Stamford, Conn., assignors to Stanford Chemical Industries, Inc., Cincinnati, Ohio, a corporation of Ohio

Original application Dec. 3, 1963, Ser. No. 327,649. Divided and this application Aug. 7, 1967, Ser. No. 683,036
Int. Cl. D06l *1/10;* G01n *27/10*
U.S. Cl. 8—142 4 Claims



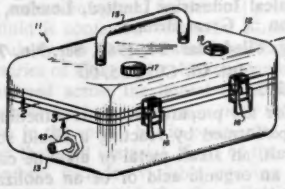
In a drycleaning system, a method for rapidly detecting relative humidity of drycleaning solvent in the washing chamber comprising positioning adjacent to the washing chamber at the outlet conduit a conductivity device through which all of the solvent from the washing chamber passes, said conductivity device comprising an outer tubular electrode and a concentrically mounted inner electrode.

3,561,918

GAS STERILIZATION MEDICAL CASE

Charles Dean Ray, Timonium, Md., assignor to Hoffmann-La Roche, Inc., Nutley, N.J., a corporation of New Jersey

Filed Feb. 28, 1968, Ser. No. 708,905
Int. Cl. A61l *3/00;* B65d *81/18*
U.S. Cl. 21—84 6 Claims



A portable apparatus for housing and sterilizing medical implements, having a separable two-piece but gas-tight container comprising a mechanism communicating with the container interior for applying a sterilizing gas thereto, the container conforming to the size of the implement for which it is intended to house, and further adapted to receive such implement by means of spring clip or other suitable means secured to the inner surface(s) of the container. A window is provided at the top of the container for visually inspecting an indicating device temporarily secured within the container and under the window to determine if a suitable concentration of gas has been provided for sterilization. A relief valve is provided for bleeding off gas within the housing prior to use of the implement therein. Additional provisions adapt the device for use with a disposable gas cartridge should a source of gas not be readily at hand.

3,561,919

IRON OXIDE-FERRITE PRODUCTION PROCESS

Joseph W. Ayers, Easton, Pa. (% Chas. Pfizer & Co., Inc., 235 E. 42nd St., New York, N.Y. 10017)

No Drawing. Continuation-in-part of application Ser. No. 691,714, Dec. 19, 1967, which is a continuation-in-part of application Ser. No. 420,679, Nov. 23, 1964. This application June 13, 1969, Ser. No. 833,151
Int. Cl. C01g *49/00, 49/02*
U.S. Cl. 23—51 7 Claims

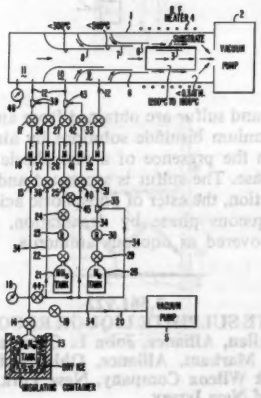
Process for the preparation of soft and hard ferrites from synthetic non-magnetic iron oxide. Process for manufacturing ferrites, of low silica content directly from this iron oxide scale without resort to purification steps to remove silica from the iron source material. Scale is calcined in the presence of ferrous sulfate heptahydrate or sulfuric acid or a combination of both; the synthetic non-magnetic iron oxide product is then milled to the desired fineness, combined with other ferrite ingredients and formed into ferrites. Synthetic ion oxide product also suitable for use in rouges.

3,561,920

CHEMICAL VAPOR DEPOSITION OF THICK DEPOSITS OF ISOTROPIC BORON NITRIDE

Malcolm L. Kinter, Menlo Park, and Ira Weissman, Palo Alto, Calif., assignors to Varian Associates, Palo Alto, Calif., a corporation of California

Filed May 31, 1968, Ser. No. 733,348
Int. Cl. C01b *1/00, 21/06, 35/00*
U.S. Cl. 23—191 7 Claims



Substrate member is heated to a suitable temperature in excess of 1200° C. in a deposition chamber partially evacuated to subatmospheric pressure. Diborane gas is reacted with ammonia gas within a temperature range of

200–300° C. to produce an intermediate gaseous reaction product. The intermediate gaseous reaction product is caused to flow across the heated substrate to cause decomposition of the gaseous reaction product with resultant deposition of a relatively thick deposit of isotropic boron nitride onto the heated substrate. In a preferred embodiment, the substrate member is tubular and coaxially aligned with a gaseous stream of the intermediate gaseous reaction product such that the gaseous stream flows through the interior of the tubular substrate for depositing the boron nitride on the interior surfaces of the tubular substrate. The diborane gas is introduced in a relatively inert carrier gas stream in a concentration of more than 50,000 parts per million diborane gas. The subatmospheric pressure within the deposition chamber is preferably less than 3/10 of an atmosphere such that the concentration of the intermediate gaseous reaction product is relatively high and the probability that the reaction product will reach the interior wall of the substrate is relatively high to facilitate relatively rapid growth rates of the boron nitride and efficient utilization of the intermediate gaseous reaction product.

3,561,921

MANUFACTURE OF AMMONIA AND SULFUR FROM AMMONIUM SULFIDE SOLUTIONS

Henri Gruhier, Chatillon-sur-Bagneux, and Philippe Renault, Neuilly-sur-Seine, France, assignors to Institut Francaise du Petrole, des Carburants et Lubrifiants, Rueil Malmaison (Hauts-de-Seine), France

Filed June 12, 1968, Ser. No. 736,310
Claims priority, application France, June 23, 1967, 111,809
Int. Cl. C01c *1/00*
U.S. Cl. 23—193 **6 Claims**

Ammonia and sulfur are obtained from ammonium sulfide or ammonium bisulfide solutions by air oxidation at 10–80° C. in the presence of a phosphoric acid ester in the liquid phase. The sulfur is separated and recovered as such by filtration, the ester of phosphoric acid is separated from the aqueous phase by decantation, and the ammonia is recovered as aqueous ammonia.

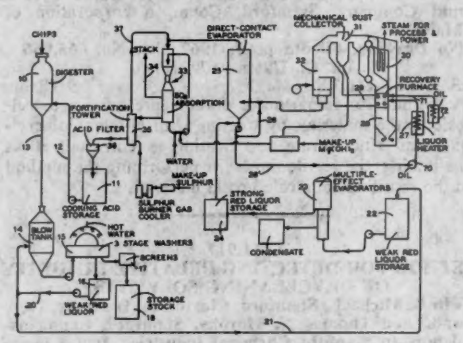
3,561,922

WASTE SULPHITE LIQUOR RECOVERY

Robert K. Allen, Alliance, John L. Clement, Akron, and Henry P. Markant, Alliance, Ohio, assignors to The Babcock & Wilcox Company, New York, N.Y., a corporation of New Jersey

Continuation of application Ser. No. 487,869, Sept. 16, 1965. This application Sept. 8, 1969, Ser. No. 860,151
Int. Cl. D21c *11/12*; C01f *5/06*
U.S. Cl. 23—201 **4 Claims**

A chemical and heat recovery system wherein magnesium base pulp residual liquor is burned in a fluid cooled furnace to produce particle-form magnesium oxide and sulphur dioxide. Supplemental fuel is added when necessary with the pulp residual liquor to maintain combustion gas temperatures above a predetermined value



to eliminate carbon particles from the combustion products. Combustion air delivered to the furnace with either or both fuels is closely controlled to avoid formation of sulphur trioxide in the products of combustion.

3,561,923

PROCESS FOR THE PRODUCTION OF CHLORINE

Isamu Takakura, Chiba, Shinzaburo Maeda, Tokyo, Tadashi Namba and Yasuo Niwa, Chiba, Tetsuya Uchino and Kimihiko Sato, Yokohama, and Nobuaki Kunii, Tokyo, Japan, assignors to Asahi Glass Co., Ltd., Tokyo, Japan

No Drawing. Filed Mar. 25, 1968, Ser. No. 715,582
Claims priority, application Japan, Mar. 29, 1967, 42/19,198; Sept. 4, 1967, 42/56,435; Feb. 14, 1968, 43/8,855
Int. Cl. C01b *7/02*
U.S. Cl. 23—219 **4 Claims**

A reaction mass is produced by impregnating a porous inert support with magnesium chloride and alkali metal chloride as well as copper chloride as reaction promoter, said reaction mass is chlorinated by means of hydrogen chloride or ammonium chloride, and then the resulting chlorinated mass is oxidized by oxygen or air to generate chlorine, while at the same time the reaction mass regenerated by the oxidation is recycled to said chlorination stage.

3,561,924

PROCESS FOR THE PREPARATION OF RUTHENIUM CARBONYL

John Paton Candlin, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England, a corporation of Great Britain

No Drawing. Filed Mar. 14, 1968, Ser. No. 712,953
Int. Cl. C01g *55/00*
U.S. Cl. 23—203 **9 Claims**

A process for the preparation of tri-ruthenium dodecacarbonyl is performed by reacting a liquid solution of a ruthenium salt, an alkali metal or alkaline earth metal compound of an organic acid or of an enolizable compound with carbon monoxide and hydrogen. Typically temperatures between 100° and 250° C. and up to 300 atmospheres of pressure are used. The tri-ruthenium dodecacarbonyl is extracted from the reaction products.

3,561,925

PRODUCTION OF AMMONIA AND SULFUR FROM AMMONIUM SULFITES OR SULFIDES

André Deschamps, Chatou, and Philippe Renault, Neuilly-sur-Seine, France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil, Malmaison, Hauts-de-Seine, France

Filed June 20, 1968, Ser. No. 738,471
Claims priority, application France, June 26, 1967, 111,962
Int. Cl. C01b *17/02*; C01c *1/10*
U.S. Cl. 23—226 6 Claims

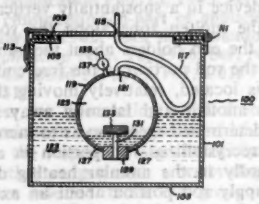
A process for manufacturing ammonia and sulfur which comprises reacting ammonium sulfite or ammonium sulfide with, respectively, a gas containing hydrogen sulfide or sulfur dioxide, at a temperature of about 90 to 180° C. in the presence of a liquid phase containing at least 10% by weight of a compound selected from the group consisting of higher alcohols, polyols, mono- and polyalkylene glycols, esters and ethers of the alcohols, polyols and glycols and phosphoric esters, and recovering sulfur therefrom as well as water and ammonia in the gaseous state.

3,561,926

ATTITUDE INSENSITIVE GAS GENERATOR

James F. McElroy, Hamilton, Mass., assignor to General Electric Company, a corporation of New York

Filed Apr. 10, 1968, Ser. No. 720,182
Int. Cl. B01j *7/02*
U.S. Cl. 23—282 5 Claims



A ball is floated on the surface of a liquid reactant confined within a sealed container. Within the ball is a body providing a reaction surface at which gas is produced when the liquid reactant is brought in contact. A flexible conduit withdraws gas from an upper portion of the ball while apertures are provided in the ball below the level of the liquid reactant.

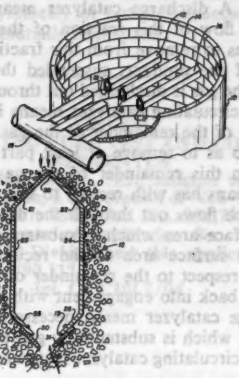
3,561,927

FLUID COLLECTION SYSTEM FOR VERTICAL PROCESS VESSELS

John B. Jones, Jr., Denver, Colo., assignor to Paraho Corporation, Washington, D.C., a corporation of Nevada

Filed Jan. 22, 1969, Ser. No. 792,976
Int. Cl. B01j *9/06*
U.S. Cl. 23—283 8 Claims

A fluid collection system for vertical process vessels, in which a fluid is contacted with solid content of the vessel, particularly for large diameter vessels, includes at least one series of elongated collector members symmetrically positioned across the lateral extent of the process vessel, each series being generally near the top of a reaction zone in the vessel, but in position to be completely covered by the solid material. Each of the elongated collector members includes variable opening means across its lateral extent to provide for the collection and the removal of fluids moving through the bed of solids in a direct ratio to the area of the vessel served by a particular increment of inflow into the collector. This provides for a uniform flow of the fluid through the bed across the entire lateral extent of the process vessel, thereby controlling channelling of the fluids and over treatment of some of the solids.

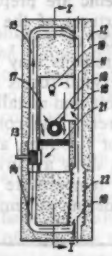


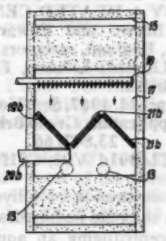
3,561,928

GAS PURIFYING APPARATUS

Fritz Weber, Wahnheide, Germany, assignor to Electro-Isolier-Industrie Wahn, Wilhelm Ruppert, Wahn, Rhineland, Germany

Filed Oct. 27, 1967, Ser. No. 678,719
Claims priority, application Germany, Oct. 31, 1966, P 16 04 865.0
Int. Cl. B01j *9/04*; F26b *13/02, 21/06*
U.S. Cl. 23—288 10 Claims





A gas purifying apparatus to be used in connection with the treatment of work with a gas from which products are to be removed before the gas is discharged to the outer atmosphere. A circulating means circulates the gas first into engagement with the work so as to treat the

latter and then along a return away from the work and back into engagement with the work. A discharge means communicates with this return for discharging a fixed fraction of the gas which flows therethrough out to the outer atmosphere. A discharge catalyzer means is situated in the path of flow of this fraction of the gas to the discharge means to remove from this fraction of the gas at least part of the products suspended therein before the fraction of the gas is discharged out through the discharge means. A recirculating catalyzer means is situated in the path of flow of the remainder of the gas flowing through the return so as to remove at least part of the products suspended in this remainder of the gas. The discharge catalyzer means has with respect to this fixed fraction of the gas which flows out through the discharge means an effective surface area which is substantially greater than the effective surface area of the recirculating catalyzer means with respect to the remainder of the gas which is recirculated back into engagement with the work, so that the discharge catalyzer means necessarily operates with an efficiency which is substantially greater than that with which the recirculating catalyzer means operates.

3,561,929

TERNARY RARE-EARTH COMPOUNDS WITH ELEMENTS OF BOTH FIFTH AND SIXTH GROUPS OF THE PERIODIC SYSTEM

Fritz Hulliger, Uerikon, Switzerland, assignor to American Cyanamid Company, Stamford, Conn., a corporation of Maine

No Drawing. Filed July 29, 1968, Ser. No. 748,228
The portion of the term of the patent subsequent to Apr. 14, 1987, has been disclaimed
Int. Cl. C01f *17/00*
U.S. Cl. 23—315 **6 Claims**

New rare-earth compounds having the formula LnXY, in which Ln is yttrium or a rare-earth element except europium and ytterbium, X is sulfur or selenium, and Y is phosphorus or arsenic are prepared at high temperatures either from mixtures of the elements or from the mono-compounds LnX or LnY, which react with the other element. The products may be produced in microcrystalline or single crystal forms and are orthorhombic. The compounds exhibit non-metallic electrical properties and are not transparent. The compounds where Ln is yttrium, lanthanum or lutetium, are non-magnetic while the other compounds show a Curie-Weiss-type paramagnetism around room temperature and probably all will undergo magnetic ordering at temperatures of the order of 10° K.

3,561,930

SEPARATION OF CALCIUM SULPHATE HEMIHYDRATE BY A HEATED CENTRIFUGE

Martin Granger Brown and Edward Graham Foster, Norton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England, a corporation of Great Britain

Filed Apr. 24, 1967, Ser. No. 633,176
Claims priority, application Great Britain, May 27, 1966, 23,847/66
Int. Cl. B01d *9/02;* **C01f** *11/46*
U.S. Cl. 23—293 **4 Claims**

Method for the separation of a hydraulic binding material, e.g. calcium sulphate hemihydrate, from water. The method involves centrifuging an aqueous slurry of the binding material in a centrifuging zone and removing the separated moist solid material and the separated water from different parts of the zone, at least one surface upon which the separated moist solid material is liable to be deposited being heated to a temperature which is at least 100° C. and at which hydration of the material is substantially prevented. Apparatus for carrying out the method is also described.

3,561,931

ECCENTRIC FEED ROTATION IN ZONE REFINING

Carl-Heinz Vogel, Pretzfeld, and Ludwig Sporrer, Erlangen, Germany, assignors to Siemens Aktiengesellschaft, a corporation of Germany

Filed Aug. 4, 1967, Ser. No. 658,512
Claims priority, application Germany, Aug. 6, 1966, S 105,235
Int. Cl. B01j *17/10*
U.S. Cl. 23—301 **6 Claims**

Process of zone melting a semiconductor rod having under process, a recrystallized portion and a supply portion to be recrystallized, each separated from the other by a molten zone, includes supporting the rod substantially vertically by first and second holders respectively located at the free ends of the supply rod portion and the recrystallized rod portion, forming the molten zone in the rod with an annular heating device spaced from and surrounding the rod, relatively moving the rod and the heating device in a substantially vertical direction so as to pass the molten zone along the rod, rotating at least one of the end holders about the substantially vertical axis of the rod portion at the free end of which the end holder is located, relatively moving the end holder towards one another and laterally away from one another at predetermined speeds so as to increase the thickness of the recrystallized rod portion in a direction radially outwardly to the annular heating device and rotating the supply rod portion about an axis eccentric to the substantially vertical axis of the supply rod portion.

Apparatus for carrying out the foregoing method includes substantially vertically spaced end holders supporting between them a vertically extending semiconductor rod having a recrystallized portion and a supply portion to be recrystallized divided by a molten zone, means for relatively displacing the end holders toward one another, an annular heating device surrounding and spaced from the rod and adapted to form the molten zone in the rod, means for displacing the heating device along the rod so as to pass the molten zone along the rod, means for rotating at least one of the end holders about its substantially vertical axis, means for displacing one of the end holders in a direction transverse to the axis thereof so that the recrystallized rod portion is formed with a specific diameter extending in direction toward the annular heating device, and means for rotating the supply rod portion about an axis eccentric to the axis of the supply rod portion.

3,561,932

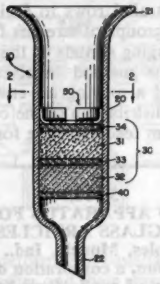
INDIUM GENERATOR

Irwin J. Gruverman, Needham, and Gregory G. Rocco, Wakefield, Mass., assignors to New England Nuclear Corporation, Boston, Mass., a corporation of Massachusetts

Filed Jan. 26, 1967, Ser. No. 611,963
Int. Cl. B01d *11/02;* **C01g** *15/00, 19/00*
U.S. Cl. 23—312 **4 Claims**

A generator of a daughter radionuclide, particularly radioactive indium (In^{113m}), and a method of loading a particulate substrate of the generator with a parent radionuclide. The daughter radionuclide, which results from

the radioactive decay of its parent, is selectively extracted from the substrate by a mineral acid solvent (eluant),



such as hydrochloric acid (HCl) at a concentration less than one-tenth normal (0.1 N).

3,561,933
FLOCCULATION PROCESS

Alfred J. Restaino, Wilmington, Del., and Weldon N. Reed, Pennington, N.J., assignors to Atlas Chemical Industries, Inc., Wilmington, Del., a corporation of Delaware

No Drawing. Application Feb. 13, 1963, Ser. No. 258,119, which is a continuation-in-part of application Ser. No. 177,150, Mar. 2, 1962, both now abandoned. Divided and this application Nov. 10, 1966, Ser. No. 593,320

Int. Cl. B01d *11/02, 21/01;* **C01f** *7/04*

U.S. Cl. 23—312 **11 Claims**

1. A process for flocculating solids from their finely divided suspensions in aqueous media which comprises introducing into the suspension a graft copolymer prepared by (1) contacting oxygen with a water-dispersible polymeric substrate selected from the group consisting of starch, casein, algin, dextran, dextrin, polyvinyl alcohol, and a polymeric condensate of a 2 to 3 carbon alkylene oxide, irradiated with high energy ionizing radiation to a dosage of from 0.1 to 30 megarads whereby hydroperoxide groups are introduced into said polymers and (2) subsequently contacting the peroxidized polymeric substrate with an aqueous dispersion of a vinyl monomer capable of free radical induced polymerization in the presence of dissolved catalyst capable of producing free radicals by reaction with hydroperoxides.

3,561,934
SINTERED STEEL PARTICLES CONTAINING DISPERSED CARBIDES

Gary Steven, Pittsburgh, Pa., assignor to Crucible Inc., a corporation of Delaware

Filed Sept. 11, 1967, Ser. No. 666,776

Int. Cl. C22c *29/00*

U.S. Cl. 29—182.7 **6 Claims**

The invention relates generally to powdered metal articles and method for producing the same. In more particular aspects, the invention relates to powdered metal articles produced from high speed tool and die steel compositions by hot compacting particles of said compositions. The particles range in size from about —30 or finer standard mesh and contain a reactive metal component such as titanium, vanadium, zirconium, columbium, molybdenum, tungsten or tantalum. The reactive metal component is reacted with a non-metal, which may be carbon, oxygen or nitrogen, to produce a non-metallic dispersion of said reactive metal and non-metal. The article is capable of hardening treatment by conventional austenitizing, quenching and tempering to hardness levels above about 58 R_c for die steels and 64 R_c for high speed steels. Austenitizing to these high hardness levels may be achieved in very short times on the order of two minutes or less. In addition during hardening treatment the symmetry or out-of-roundness of the article remains substantially unchanged.

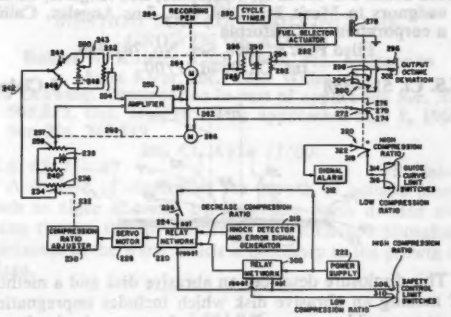
3,561,935
AUTOMATED FUEL TEST AND CONTROL APPARATUS

William E. Beal, Pitman, N.J., assignor to Mobil Oil Corporation, a corporation of New York

Application July 17, 1963, Ser. No. 295,733, which is a continuation-in-part of application Ser. No. 160,051, Dec. 18, 1961. Divided and this application Jan. 9, 1969, Ser. No. 790,117

Int. Cl. C10l *1/04*

U.S. Cl. 44—2 **5 Claims**



A system for controlling a combustion quality of a fuel, e.g., octane or cetane value, wherein the detonation intensity or time lag of a test fuel powering a standard test engine is compared to a reference value to generate an error signal. The compression ratio of the engine is adjusted in response to a function of the error signal to maintain a predetermined condition of detonation intensity or time lag, and the amount of adjustment of the compression ratio provides a representation of the combustion quality of the fuel. The system also includes means for controlling a process of blending the test fuel to a predetermined specificiation in response to a signal which is a function of the amount of adjustment of the compression ratio.

3,561,936
JET FUEL COMPOSITION

George W. Eckert, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y., a corporation of Delaware

No Drawing. Filed Mar. 17, 1966, Ser. No. 535,019

The portion of the term of the patent subsequent to Nov. 4, 1986, has been disclaimed

Int. Cl. C10l *1/10*

U.S. Cl. 44—58 **8 Claims**

An anti-wear jet fuel oil composition containing 100–200 pounds per thousand barrels of trimer acid.

ERRATUM

For Class 44—63 see:
Patent No. 3,561,152

3,561,937
SHAPED POLYESTER HAVING INCREASED ADHESION TO COATINGS

Richard A. Matthews, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn., a corporation of Delaware

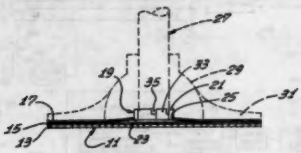
No Drawing. Filed Nov. 14, 1968, Ser. No. 775,929
Int. Cl. B29g 5/00; C08g 51/12
U.S. Cl. 51—298 4 Claims

Tensilized shaped polyester strips, such as fibers or films, having increased receptivity to adhesion by resinous materials. The improved receptivity results from immersing a hot amorphous strip in a quench solution of isocyanate dissolved in and reacted with a stoichiometric excess of at least one monohydric alcohol, rinsing the strip to remove excess quench solution from the surface, and thereafter tensilizing the strip. Fibers treated in this manner are especially useful in the manufacture of lofty open low density nonwoven fibrous abrasive products.

3,561,938
ABRASIVE DISK

Aleck Block and Keith R. Whitcomb, Los Angeles, Calif., assignors to Merit Products, Inc., Los Angeles, Calif., a corporation of California

Filed Feb. 5, 1968, Ser. No. 702,945
Int. Cl. B24d 17/00
U.S. Cl. 51—358 5 Claims

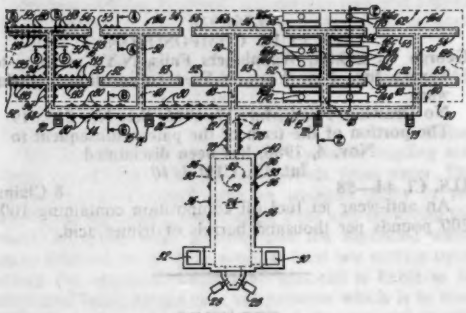


This disclosure describes an abrasive disk and a method of making an abrasive disk which includes impregnating a compressible porous backing sheet matrix having a plurality of segments defining voids with a bonding material which coats the segments to form a backing sheet. The backing sheet is then placed next to a hub and the two are heated and squeezed to compress the backing sheet and cause the bonding material to flow to bond the hub to the backing sheet.

3,561,939
APPARATUS FOR PROCESSING FILAMENT-FORMING MINERAL MATERIALS AND FORMING AND PACKAGING FILAMENTS

Magnus L. Froberg and Roy E. Smith, Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, a corporation of Delaware

Filed Nov. 22, 1967, Ser. No. 685,204
Int. Cl. C03b 37/00
U.S. Cl. 65—11 5 Claims

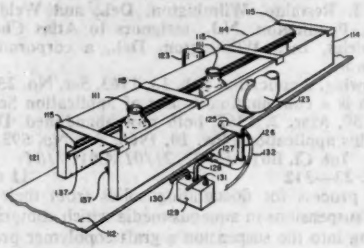


This invention relates to a method of and apparatus for processing heat-softenable mineral materials, such as glass, and involves melting and refining batch material in one melting and refining furnace to a high degree of homogeneity and flowing the refined glass in a multiplicity of paths to deliver the glass at controlled temperatures to a large number of stream feeders or bushings arranged in two parallel rows to facilitate simultaneous attenuation of the groups of streams from the feeders to filaments and packaging strands of the filaments on rotatable collectors. The method involves temperature and humidity control of a moving air environment and substantially uniform distribution of the conditioned air with respect to the stream feeders in the forming room.

3,561,940
METHOD AND APPARATUS FOR PREPARING GLASS ARTICLES

Addison B. Scholes, Muncie, Ind., assignor to Ball Corporation, a corporation of Indiana

Continuation-in-part of applications Ser. No. 376,073 and Ser. No. 376,243, both June 18, 1964, and Ser. No. 423,629, Dec. 21, 1964, which in turn is a continuation-in-part of application Ser. No. 347,848, Feb. 27, 1964. This application Oct. 2, 1967, Ser. No. 677,492
Int. Cl. C03c 17/00
U.S. Cl. 65—60 8 Claims



This invention pertains to a method of treating a virgin vitreous surface to protect against degrading in strength and other properties. Prior to completion of annealing, the vitreous surface is exposed to stannic chloride vapor in an inert carrier to form a colorless coating of tin oxide on the vitreous surface. Articles so treated form a portion of the invention as does treatment of metal glass-contacting surfaces in a similar manner to curtail abrasion of glass when contacted by such coated surfaces.

The invention also pertains to apparatus for carrying out the method by confining the stannic chloride vapor in a hood with means for carrying the vitreous surface therethrough. A particularly useful apparatus includes inlet and exhaust ports to conduct the vapor only over selected portions of the vitreous surface.

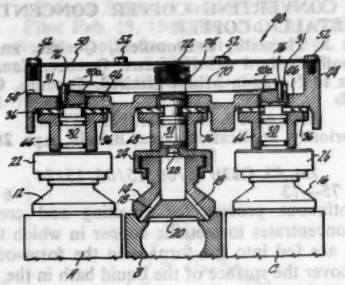
3,561,941
TRIPLE GOB SETTLE BLOWHEAD AND BAFFLE CONSTRUCTION

Francis A. Dahms, Tariffville, Conn., assignor to Emhart Corporation, Bloomfield, Conn., a corporation of Connecticut

Filed June 4, 1968, Ser. No. 734,457
Int. Cl. C03b 9/14
U.S. Cl. 65—261 5 Claims

In the blank mold side of a triple gob Hartford I.S. Glassware Forming Machine Section, a settle blowhead and baffle carrier is provided for supporting three settle blowheads or baffles in depending relationship for movement into registration with corresponding openings in three individual blank molds. Two of the three baffles are slidably supported in the carrier for limited vertical floating movement and a single leaf spring urges these

two baffles downwardly below the third so that as the baffles engage their respective blank mold openings, the



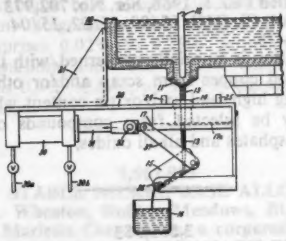
spring is resiliently deformed to equalize the closing forces between all three baffles and their respective blank molds.

3,561,942

APPARATUS FOR FEEDING MOLTEN GLASS

Robert B. Cleverly, Pittsfield, Mass., assignor to General Electric Company, a corporation of New York

Filed Dec. 4, 1968, Ser. No. 781,127
Int. Cl. C03b *5/38*
U.S. Cl. 65—325 **4 Claims**



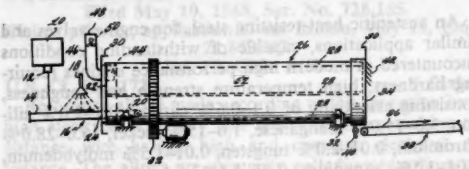
This application discloses an improved flow control apparatus for a continuous discharge type glass furnace. The apparatus comprises a guide tube positioned to encircle a free-falling stream of discharged molten glass and a reciprocable shear plate movable across the open bottom end of the guide tube between two spaced-apart rest positions of non-interference with the glass stream. To this end the shear plate is provided with two spaced-apart apertures each of which is in registry with the guide tube in one rest position of the plate. An imperforate intermediate portion of the plate momentarily closes the bottom of the tube while the shear plate is in transit between its rest positions.

3,561,943

PROCESS FOR PREPARING A SOIL CONDITIONER FROM WOOD WASTES MATERIALS

Charles W. Gay, Jr., 603 W. Las Cruces Ave., and Donald D. Dwyer, 3015 Fairway Drive, both of Las Cruces, N. Mex. 88001

Filed Feb. 2, 1968, Ser. No. 702,703
Int. Cl. C05f *11/08*
U.S. Cl. 71—9 **8 Claims**



Finely divided wood waste material such as ground pine bark or sawdust or the like, separately or in admixture, is mixed with a microbial source such as ground natural manure, sewage sludge or industrial wastes. To the mixture there is also added water and the total mixture is then heated, with agitation, in the presence of a molecular oxygen containing gas, such as air, in amounts sufficient to cause aerobic decomposition.

3,561,944

SOIL TREATING COMPOSITION

John J. Battistoni and William E. Hibbard, Las Vegas, Nev., assignors to Nevada Enzymes, Inc., a corporation of Nevada

No Drawing. Filed Nov. 26, 1968, Ser. No. 779,224
Int. Cl. C05f *5/00*
U.S. Cl. 71—26 **10 Claims**

An enzymatic soil enhancing composition comprises water, an enzymatic fermentation reaction product prepared from kelp, cane molasses, raw cane sugar, yeast, malt and a magnesium salt, as well as surfactants, urea and ammonium sulfate.

3,561,945

METHOD FOR CONTROLLING THE GROWTH OF ALGAE

Robert W. Kilburn, Lake Wales, Fla., assignor to Aqua Klear, Inc., Lake Wales, Fla.

No Drawing. Continuation-in-part of application Ser. No. 505,017, Oct. 24, 1965. This application July 8, 1968, Ser. No. 743,019
Int. Cl. A01n *11/00*
U.S. Cl. 71—67 **5 Claims**

A method of controlling the growth of aquatic plants such as algae in water by dispersing finely divided alumina therein thereby adsorbing the dissolved phosphate contained in the water which is necessary to the growth of algae.

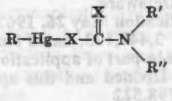
3,561,946

METHOD OF DEFOLIATING PLANTS

Henry G. Braxton, Jr., Franklin Village, Mich., and Evelyn J. Lajiness, Caledonia, Wis., assignors to Ethyl Corporation, New York, N.Y., a corporation of Virginia

No Drawing. Filed Oct. 31, 1968, Ser. No. 772,403
Int. Cl. A01n *9/00*
U.S. Cl. 71—70 **2 Claims**

Organomercury compounds having the formula:



wherein R is phenyl or an alkyl-substituted phenyl group having up to 12 carbon atoms, R′ and R″ are alkyl groups having up to six carbon atoms, and X is sulfur which possess herbitoxic properties. Therefore, formulations containing such compounds are useful in controlling undesirable vegetation or in plant defoliation without killing the plant itself.

3,561,947

METHOD OF DEFOLIATING PLANTS

Henry G. Braxton, Jr., Franklin Village, Mich, and Evelyn J. Lajiness, Caledonia, Wis., assignors to Ethyl Corporation, New York, N.Y., a corporation of Virginia

No Drawing. Filed Oct. 31, 1968, Ser. No. 772,352
Int. Cl. A01n *9/00*
U.S. Cl. 71—70 **2 Claims**

Organomercury compounds having the formula:

$$R—Hg—NO_3 \cdot R^1—Hg—OH$$

wherein R and R^1 are phenyl or alkyl-substituted phenyl groups having up to 12 carbon atoms possess herbitoxic

properties. Therefore, formulations containing such compounds are useful in controlling undesirable vegetation or in plant defoliation without killing the plant itself.

3,561,948

HERBICIDAL COMPOSITIONS CONTAINING CERTAIN SUBSTITUTED IMIDAZOPYRIDINES

Christopher Edward Dealtry, Ulverston, Geoffrey Tattersall Newbold, Saffron Walden, and Albert Percival, Hauxton, England, assignors to Fisons Pest Control Limited, Harston, Cambridgeshire, England

No Drawing. Filed Apr. 8, 1966, Ser. No. 541,103
Claims priority, application Great Britain, Apr. 15, 1965, 16,149/65
Int. Cl. A01n *9/02, 9/22*
U.S. Cl. 71—92 14 Claims

Substituted imidazopyridines of the type of e.g. 6-chloro-2-trifluoromethylimidazo(4,5-b)pyridine, and their metal salts, ammonium salts, amine salts and N-oxides are valuable herbicides, useful alone or in admixture with known herbicides.

3,561,949

HERBICIDAL METHOD USING 2-CHLORO-3-MERCAPTOPROPYL N,N-SUBSTITUTED THIOLCARBAMATES

William Carter Doyle, Jr., Shawnee Mission, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa., a corporation of Delaware

No Drawing. Original application Mar. 24, 1967, Ser. No. 625,603, now Patent No. 3,510,290, dated May 5, 1970. Divided and this application July 30, 1969, Ser. No. 854,343
Int. Cl. A01n *9/12;* C07d *59/00*
U.S. Cl. 71—100 3 Claims

By a method of synthesis based on a secondary amine, carbon disulfide and epichlorohydrin there are produced 2,3-epithiopropyl N,N-dialkylthiolcarbamates which are used as selective herbicides, particularly in pre-emergent control of grasses such as brome and volunteer oats.

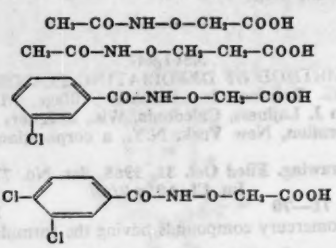
3,561,950

METHODS OF COMBATING UNDESIRED PLANT GROWTH WITH SUBSTITUTED CARBOXAMIDOOXYALKANOIC ACIDS AND SALTS THEREOF

Ralph P. Neighbors, Olathe, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa., a corporation of Delaware

No Drawing. Application May 26, 1967, Ser. No. 641,487, now Patent No. 3,449,113, dated June 10, 1969, which is a continuation-in-part of application Ser. No. 374,813, June 12, 1964. Divided and this application Nov. 12, 1968, Ser. No. 798,522
The portion of the term of the patent subsequent to Aug. 6, 1985, has been disclaimed
Int. Cl. A01n *9/20;* C07c *83/08*
U.S. Cl. 71—115 1 Claim

Undesired plant growth is combated by applying to the locus of the plants a carboxamidooxyalkanoic acid having one of the following structural formulas:



In addition there are disclosed the use of other herbicides to which U.S. Pat. 3,449,113 is directed.

3,561,951

METHOD OF FEEDING COPPER CONCENTRATES IN A CONTINUOUS PROCESS FOR SMELTING AND CONVERTING COPPER CONCENTRATES TO METALLIC COPPER

Nickolas J. Themelis, Beaconsfield, Quebec, and Peter Tarassoff, Dollard des Ormeaux, Quebec, Canada, assignors to Noranda Mines Limited, Toronto, Ontario, Canada

Filed Apr. 3, 1967, Ser. No. 627,851
Claims priority, application Great Britain, Apr. 28, 1966, 18,647/66
Int. Cl. C22b *15/00, 15/06, 15/14*
U.S. Cl. 75—73 6 Claims

A continuous process for smelting and converting copper concentrates to metallic copper in which the concentrates are fed into the furnace in the form of pellets so as to cover the surface of the liquid bath in the furnace with a thin layer of pellets and in which the pellets are fed in such a way as to prevent the formation of agglomerates of unsmelted pelletized material.

3,561,952

COPPER-REFINING METHOD

William B. Greenberg, Wynnewood, Pa. (% Greenberg Engineering Co., 211 Rock Hill Road, Bala-Cynwyd, Pa. 19004)

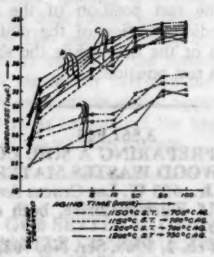
Filed Feb. 5, 1968, Ser. No. 702,973
Int. Cl. C22b *15/00, 15/02, 15/04*
U.S. Cl. 75—76 13 Claims

This invention is especially concerned/with the production of refined copper from scrap and/or other impure copper having high lead and/or tin content wherein slag formers may be selected from compounds of borates, silicates, phosphates and alkali oxides.

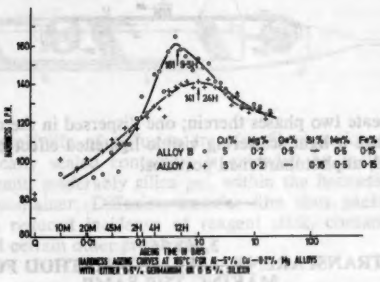
3,561,953

AUSTENITIC HEAT-RESISTING STEEL CONTAINING NICKEL, CHROMIUM AND MANGANESE

Itaru Niimi, Toyota-shi, and Hideyo Yagasaki, Sendai-shi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Filed Mar. 19, 1968, Ser. No. 714,213
Int. Cl. C22c *39/20*
U.S. Cl. 75—128 2 Claims

An austenitic heat-resisting steel, for engine valves and similar applications, capable of withstanding conditions encountered in modern high performance engines requiring hardness, high temperature strength and toughness, consisting essentially of 0.1–0.6% carbon, 0.1–2.0% silicon, 3.0–15.0% manganese, 1.0–15% nickel, 15.0–28.0% chromium, 0.01–2.0% tungsten, 0.01–1.5% molybdenum, 0.01–1.5% vanadium, 0.01–1.5% columbium, 0.2–0.6% nitrogen, 0.001–0.020% calcium, less than 0.008% oxygen, and the balance of iron with incidental impurities.

3,561,954
ALUMINUM-BASE ALLOYS
Greville B. Brook, Beaconsfield, England, assignor to Fulmer Research Institute Limited
Filed Feb. 19, 1968, Ser. No. 707,024
Claims priority, application Great Britain, Feb. 27, 1967, 9,285/67
Int. Cl. C22c 21/00
U.S. Cl. 75—142 14 Claims



An aluminium base alloy is disclosed which contains germanium, magnesium and copper. Preferably, the alloy comprises 0.02% to 0.25% germanium, 0.1% to 0.5% magnesium, and 4.0% to 6.5% copper, with if desired up to 0.5% silicon, up to 1% manganese and up to 0.5% iron.

3,561,955
STABLE NICKEL BASE ALLOY
Harold L. Wheaton, Rolling Meadows, Ill., assignor to Martin Marietta Corporation, a corporation of Maryland
No Drawing. Filed Aug. 30, 1966, Ser. No. 575,975
Int. Cl. C22c 19/00
U.S. Cl. 75—171 11 Claims

A nickel base alloy having a balance of the elements chromium, tungsten, molybdenum, columbium, tantalum, titanium and aluminum to provide strength and stability at high temperatures, ductility at intermediate temperatures and resistance to sulfidation when the components have a hardening factor as follows:

1X% Cr+1.1X% W+1.8X% Mo+3.4X% Cb+1.7X% Ta+4.3X% Ti+6X% Al=55 to 67

and a stability factor as follows:

.66 Ni Matrix+1.70 Co Matrix+4.66 Cr Matrix +5.66 (W Matrix+Mo Matrix)=less than 2.50

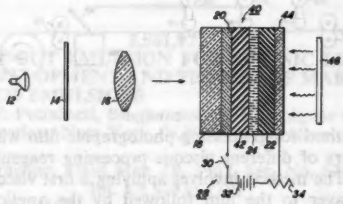
3,561,956
RESISTANCE ALLOYS
John Jephson Norreys, Duffield, Derby, England, assignor to Johnson, Matthey & Co., Limited, London, England, a British company
Filed May 10, 1968, Ser. No. 728,155
Claims priority, application Great Britain, May 11, 1967, 21,853/67
Int. Cl. C22c 5/00
U.S. Cl. 75—172 6 Claims

Resistance alloys made according to this invention have high electrical resistivity and are suitable for making resistance wire having high and constant electrical resistance. The alloys are primarily palladium/vandium alloys and include 0.5 to 11% by weight of one or more of the elements gold, molybdenum or aluminium.

3,561,957
ELECTROPHOTOGRAPHIC PROCESS USING A HIGH INTENSITY ELECTROMAGNETIC RADIATION SOURCE
David H. Perry, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y., a corporation of New York
Filed Sept. 23, 1966, Ser. No. 581,489
Int. Cl. G03g 13/04, 13/22
U.S. Cl. 96—1 2 Claims

A method for forming an electrostatic latent image on the surface of a nonphotoconductive dielectric material is disclosed. It has been determined that the charge on the surface of an insulating material may be selectively dissipated, although the material itself is not photoconductive, upon exposure to a high intensity electromagnetic radiation source.

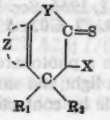
3,561,958
INDUCING FROST DEFORMATION IMAGING BY ELECTROLYTIC DEPOSITION
Benjamin Kazan, Pasadena, Calif., assignor to Xerox Corporation, Rochester, N.Y., a corporation of New York
Filed Apr. 7, 1967, Ser. No. 629,218
Int. Cl. G03g 5/00
U.S. Cl. 96—1.1 3 Claims



This invention relates to recording information and, in particular, to deformation imaging. The imaging method comprises contacting a photoconductive heat-deformable thermoplastic layer with an electrolyte containing an electrolytically reducible material, exposing the photoconductive thermoplastic layer to sensitizing radiation whereby minute quantities of the reducible material are deposited in imagewise configuration on portions of the photoconductive thermoplastic layer adjacent the electrolyte, uniformly charging the exposed surface of the photoconductive thermoplastic layer and softening the layer until it deforms in imagewise configuration according to the deposited pattern.

3,561,959
SILVER COMPLEX DIFFUSION TRANSFER PROCESS
Jozef Frans Willems, Wilrijk, and Louis Maria de Haes, Edegem, Belgium, assignors to Gavaert-Agfa N.V., Mortsel, Belgium, a Belgian company
No Drawing. Filed Dec. 11, 1967, Ser. No. 689,316
Claims priority, application Great Britain, Dec. 19, 1966, 56,649/66
Int. Cl. G03c 1/48, 5/54
U.S. Cl. 96—29 7 Claims

A silver complex diffusion transfer process carried out in the presence of at least one compound corresponding to the following general formula or to a tautomeric structure thereof:



wherein

Z represents the atoms necessary to close a fused-on phenyl nucleus including a substituted phenyl nucleus,

each of R_1 and R_2 represents (the same or different) hydrogen, alkyl including substituted alkyl or aryl including substituted aryl, and

X and Y both represent —H— or one of them represents —O— or —S— and the other one —NH—

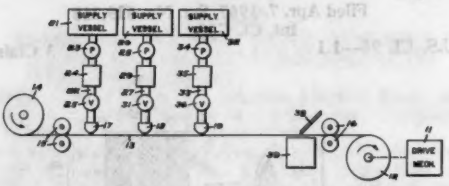
is described. Black or bluish-black transfer images are obtained more rapidly.

3,561,960

PHOTOGRAPHIC FILM PROCESSING METHOD

Alvin Cronig, Lexington, Mass., assignor to Itek Corporation, Lexington, Mass., a corporation of Delaware

Filed Apr. 1, 1968, Ser. No. 717,549
Int. Cl. G03c *5/54*
U.S. Cl. 96—29 **8 Claims**



A method for processing photographic film with multiple layers of different viscous processing reagents is disclosed. The method involves applying a first viscous processing layer to the film followed by the application of a second viscous processing layer upon the first layer. Because the two layers have viscosities of at least 5,000 centipoises, the first layer supports and initially isolates the second processing layer. Both layers are left on the film until reagent from the second viscous layer diffuses through the first layer and completes processing of the film.

3,561,961

PHOTOSENSITIVE LITHOGRAPHIC PRINTING MASTER AND PROCESS FOR PREPARATION OF A LITHOGRAPHIC PLATE

Ralph Kingsley Blake, Westfield, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del., a corporation of Delaware

No Drawing. Filed Feb. 20, 1967, Ser. No. 617,078
Int. Cl. G03c *1/78, 5/00;* **G03f** *7/02*
U.S. Cl. 96—33 **17 Claims**

A photosensitive lithographic printing master is prepared from a support such as a polyethylene terephthalate film coated with a hydrophilic photosensitive silver halide emulsion the outer surface of said emulsion being oleophilic and water-permeable. The surface of the support in contact with the emulsion can be coated with a hydrophilic layer such as a gelatin layer containing silica particles.

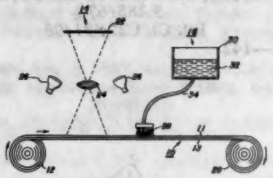
3,561,962

METHOD OF IMAGE REPRODUCTION BY PHOTOPOLYMERIZATION AND BLUSHING

Joan R. Ewing, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y., a corporation of New York

Filed Sept. 1, 1966, Ser. No. 576,649
Int. Cl. G03c *5/00*
U.S. Cl. 96—35.1 **9 Claims**

The latent image on a photohardenable material which has been exposed to a light and shadow pattern of actinic light is rendered visible by contacting the material with a liquid developer which is a nonsolvent for the photohardenable material and which is selectively absorbed in the unexposed nonphotohardened portions of the material



to create two phases therein; one dispersed in the other to produce a light scattering visible lightened effect in unexposed, unphotohardened portions.

3,561,963

TRANSPARENT MASK AND METHOD FOR MAKING THE SAME

William M. Kiba, Pacifica, Calif., assignor to Signetics Corporation, Sunnyvale, Calif., a corporation of California

Filed Sept. 11, 1967, Ser. No. 666,907
Int. Cl. G03c *5/00*
U.S. Cl. 96—36.2 **1 Claim**

The use of a transparent mask comprising a glass substrate with a stain of elemental copper therein in a process in which a photoresist is exposed to ultraviolet light through the mask.

3,561,964

METHOD FOR PRODUCTION OF SOLID STATE STORAGE PANELS

Gary G. Slaten, Palo Alto, Calif., assignor to Xerox Corporation, Rochester, N.Y., a corporation of New York

Filed July 19, 1968, Ser. No. 746,178
Int. Cl. G03c *5/00, 5/06, 1/92*
U.S. Cl. 96—36.2 **10 Claims**

This application relates to a method for the production of solid state storage panels wherein portions of a transparent, conductive metallic compound layer are converted to the opaque metal to later function as a complementary mask so that only one external mask is necessary during production. The opaque metallic segments inherently provide accurate registration with the juxtaposed segments of transparent, conductive metallic compound segments so the overlying segments of phopshor material are properly positioned.

3,561,965

VESICULAR COMPOSITIONS AND PHOTOGRAPHIC ELEMENTS CONTAINING CHLORINATED POLYOLEFINS

James G. McNally, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y., a corporation of New Jersey

No Drawing. Filed July 31, 1967, Ser. No. 657,050
Int. Cl. G03c *1/52, 1/72*
U.S. Cl. 96—75 **7 Claims**

Polyolefins having a molecular weight of from about 5,000 to about 38,000, when chlorinated to a depth of from about 45 to about 75 weight percent, based upon the chlorinated resin, are useful as the polymeric matrix for vesicular compositions which can be used in photographic elements. The scope of the present invention is designated by the following specification and claims.

3,561,966
DIFFUSION TRANSFER COMPOSITE FILM CONTAINING SILICA GEL
Mark W. Sewall, Winchester, Mass., assignor to Polaroid Corporation, Cambridge, Mass., a corporation of Delaware
Continuation of application Ser. No. 350,449, Mar. 9, 1964. This application Feb. 7, 1969, Ser. No. 800,031
Int. Cl. G03c *1/40*
U.S. Cl. 96—77 **1 Claim**

The shelf life of diffusion transfer films packaged in hermetically sealed containers is extended by including a desiccant, preferably silica gel, within the hermetically sealed container. Diffusion transfer film thus packaged exhibits reduced incidence of reagent stick, contamination and certain other problems.

3,561,967
PHOTOGRAPHIC LIGHT-SENSITIVE SILVER HALIDE ELEMENTS
Takeo Sakai and Nobuo Tsuji, Minami-Ashigara-machi, Kanagawa, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha, Kanagawa, Japan
No Drawing. Filed Aug. 31, 1967, Ser. No. 664,610
Claims priority, application Japan, Aug. 31, 1966, 41/57,486
Int. Cl. G03c *1/04*
U.S. Cl. 96—87 **9 Claims**

By incorporating a water-soluble high-molecular compound having at least one aromatic sulfonic acid group in a gelatino silver-halide emulsion layer of a photographic light-sensitive film which contains a nonionic water-soluble high-molecular compound, such as, hydroxyethyl cellulose or polyvinyl alcohol, the formation of haze is reduced and the miscibility of gelatin with the nonionic high-molecular compound is improved.

3,561,968
PHOTOREACTIVE TITANIUM DIOXIDE COMPOSITION
Horace Frank Dantro, Toms River, N.J., assignor to National Lead Company, New York, N.Y., a corporation of New Jersey
No Drawing. Continuation-in-part of application Ser. No. 648,954, June 26, 1967. This application May 22, 1968, Ser. No. 731,326
Int. Cl. G03c *1/00*
U.S. Cl. 96—88 **2 Claims**

This invention relates in general to the preparation of a titanium dioxide composition which possesses photosensitive properties useful in commercial systems designed to respond to exposure to light i.e., photographic emulsions, copy paper and the like.

3,561,969
LIGHT-SENSITIVE COLOR FORMING COMPOSITIONS OF 9,10-PHENANTHRENEQUINONE
Marion Burg, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del., a corporation of Delaware
No Drawing. Filed Oct. 17, 1967, Ser. No. 675,779
Int. Cl. G03c *1/52*
U.S. Cl. 96—90 **14 Claims**

A photosensitive composition comprises a solution of the photosensitizer 9,10-phenanthrenequinone (which may be substituted by electronegative groups), a salt of any metal ion above hydrogen in the electromotive series, and a hydrogen donor such as diethylene glycol. The hydrogen donor has to be of the type which reacts only with photoactivated phenanthrenequinone, i.e., hydrogen donation must not occur in the absence of exposure to actinic radiation. Photosensitive elements are made by coating the compositions onto supports. Exposure to actinic radiation causes the formation of color in the composition.

3,561,970
PHOTOGRAPHIC MATERIALS FOR THE SILVER-DYE-BLEACH PROCESS
Walter Püschel, Leverkusen, Paul Marx, Cologne-Buchheim, and Karl-Wilhelm Schranz, Opladen, Germany, and Jan Jaeken, Hove, Belgium, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany, a corporation of Germany
No Drawing. Filed Nov. 22, 1966, Ser. No. 596,103
Claims priority, application Germany, Dec. 3, 1965, A 50,966
Int. Cl. G03c *1/10*
U.S. Cl. 96—99 **3 Claims**

Certain azo dyes or their mesomeric azine dyes are particularly suited as silver-dye-bleach dyes. The light-sensitive emulsion used to carry the dyes can contain the dyes themselves or one or more components that will react to form the dyes subsequently, as during the processing.

3,561,971
PRINT-OUT EMULSION FOR ACTINIC LIGHT DEVELOPMENT AND PROCESS OF MAKING SUCH EMULSIONS
Henry W. Pestalozzi, Binghamton, N.Y., assignor to GAF Corporation, New York, N.Y., a corporation of Delaware
No Drawing. Filed Mar. 10, 1967, Ser. No. 622,028
Int. Cl. G03c *1/02*
U.S. Cl. 96—108 **10 Claims**

This invention deals with light-sensitive materials for the recording of images produced by light of high intensity such as the scanning beams of oscillographs and the development of these latent images by post exposure with low intensity light. The silver halide emulsions used are prepared by forming silver iodide on the surface of the silver bromide grains, the amount of silver iodide ranging from 0.2 to 10 mole percent based on the silver content. The emulsions also contain from 1 to 25 mole percent of lead bromide based on the silver content.

3,561,972
EGG AND MEAT PET FOOD
John W. Dodge, Ithaca, Gary L. Rumsey, Waverly, and Terry Gray, Batavia, N.Y., assignors to Agway, Inc., Syracuse, N.Y., a corporation of Delaware
No Drawing. Filed Nov. 6, 1967, Ser. No. 680,953
Int. Cl. A23k *1/10*; A23j *1/02, 1/08*
U.S. Cl. 99—7 **6 Claims**

Whole raw eggs are cooked to coagulation, cooled to firm condition, diced, the eggs plus .1% to .5% of citric acid by weight of the eggs is added to chopped raw meat, the mixture is placed in containers, sealed under vacuum and retorted at about 250° F. for about ninety-five minutes.

3,561,973
PROCESS FOR PREPARING HIGH-ENERGY FISH PROTEIN CONCENTRATE
Max Rutman, Santiago, Chile, assignor to Instituto de Fomento Pisquero, Santiago, Chile
No Drawing. Filed June 18, 1969, Ser. No. 834,553
Int. Cl. A23j *1/04*
U.S. Cl. 99—18 **10 Claims**

The invention comprises a process for the preparation of a water-soluble, stable, odorless fish protein concentrate

containing added fat which is useful as a food supplement. The process comprises cleaning, washing, deboning and pulping fresh fish, mixing the pulp with an aqueous emulsion of an edible fat prepared with an edible surfactant, digesting the fat-fish mixture with a proteolytic enzyme for a short period at a controlled, low temperature, the enzyme Bromelain being preferred, heating the digested mixture to terminate the enzyme activity and pasteurize the mixture, and thereafter homogenizing the mixture and drying it to recover the product.

3,561,974

METHOD OF MAKING HIGH PROTEIN BREAD

Francis Frederick Hansen, 224 E. Poplar St., Walla Walla, Wash. 99362

No Drawing. Continuation-in-part of application Ser. No. 447,047, Apr. 9, 1965. This application Sept. 2, 1969, Ser. No. 854,765

Int. Cl. A21d *8/00, 13/06*

U.S. Cl. 99—90 4 Claims

There is disclosed a protein bread which is high in all essential proteins of both milk and flour having a texture similar to white bread and a method of making the same wherein flour having a high protein content is used in conjunction with a milk protein concentrate readily dispersible in water and substantially free of fat and extremely low in lactose, with the weight of flour being greater than the weight of the milk concentrate, but with the milk protein exceeding in percentage the protein in the flour. Sodium bicarbonate and an edible acid such as sodium acid pyrophosphate are introduced into the dough as it is being mixed. The bicarbonate of soda raises the pH of the dough out of the acid range into the alkaline range to produce a more workable dough with substantially less water, whereas the sodium acid pyrophosphate reacts principally at temperatures of 100° F. and above and restores the desirable normal acidity corresponding to that of conventional white bread.

3,561,975

ENZYME ADDITIVE FOR PIE DOUGH AND MIX UTILIZING SAME

James E. Luebering, Cincinnati, and Eddy R. Hair, Colerain Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio, a corporation of Ohio

Filed May 10, 1968, Ser. No. 728,242

Int. Cl. A21d *8/04*

U.S. Cl. 99—94 8 Claims

Shortening-coated protase, e.g., papain, is employed as an ingredient in pie dough. As a result of this, the amount of crust shrinkage occurring during baking is reduced, while before baking, good dough handling properties are maintained. A preferred method for coating enzyme is by spray cooling, i.e., by prilling, a suspension of enzyme particles in melted shortening.

3,561,976

METHOD OF TENDERIZING MEAT

Meyer Michael Weber, Milwaukee, Wis., assignor to Midwest Biochemical Corporation, Milwaukee, Wis., a corporation of Wisconsin

No Drawing. Filed Oct. 31, 1966, Ser. No. 590,465

Int. Cl. A22c *21/00*

U.S. Cl. 99—107 6 Claims

A method of improving the tenderness of meat by introducing a solution of a proteolytic enzyme activator into the vascular system of a living livestock animal. The animal is slaughtered within a period of five to twenty minutes after introduction of the solution into the vascular system and the activator serves to activate the naturally occurring enzymes in the animal to break down the fibrous materials in the meat and increase the tenderness.

3,561,977

PROCESS OF MAKING SAUSAGE

Harold Rothchild, Kalamazoo, and Ronald H. Olsen, Ann Arbor, Mich., assignors to Dairy Technics, Inc., Kalamazoo, Mich., a corporation of Michigan

No Drawing. Filed Mar. 6, 1967, Ser. No. 620,643

Int. Cl. A22c *11/00*

U.S. Cl. 99—109 5 Claims

A frozen stabilized bacterial product consisting of *Pediococcus cerevisiae* mixed with a stabilizing agent, such as glycerol, and a nutrient medium. A process of making a fermented meat product in which the thawed concentrate is mixed with a meat formulation in an amount of at least .1 percent by weight, then the mixture is heated to between 110° F. and 125° F. for from 8 to 15 hours and then the bacterial action is terminated.

3,561,978

METHOD OF PREPARING A FRANKFURTER PRODUCT AND COMPOSITION FOR USE THEREIN

Alan S. Geisler, Ramsey, and Gregory C. Papalexis, Alpine, N.J., assignors to Technical Oil Products, Inc., Moonachie, N.J., a corporation of New Jersey

No Drawing. Continuation-in-part of application Ser. No. 500,162, Oct. 21, 1965. This application Apr. 15, 1969, Ser. No. 816,399

Int. Cl. A22c *11/00*

U.S. Cl. 99—109 6 Claims

The color, taste, and shelf life of frankfurters are improved by incorporating, within the frankfurter meat prior to introducing the same into a casing, a minor amount of sorbitol. In addition, a frankfurter having enhanced peeling characteristics is provided by including within the frankfurter meat a composition comprsing minor amounts of sorbitol and dimethylpolysiloxane.

3,561,979

PREPARATION OF SHORTENING DRIED EGG PRODUCTS

William I. Pontius, Western Springs, Joseph G. Endres, Downers Grove, and Leon A. Van Akkeren, Lombard, Ill., assignors to Armour and Company, Chicago, Ill., a corporation of Delaware

Filed June 30, 1966, Ser. No. 561,883

Int. Cl. A23l *1/32*

U.S. Cl. 99—113 13 Claims

A method for preparing a plastic shortening-dried egg product having improved functional properties useful in baking.

3,561,980

PROCESS FOR PASTEURIZATION OF WHOLE EGGS

John C. Sourby, Hawthorne, and Willibald F. Kohl, Yonkers, N.Y., and Rudolph H. Ellinger, New Canaan, Conn., assignors to Stauffer Chemical Company, New York, N.Y., a corporation of Delaware

No Drawing. Filed Jan. 2, 1968, Ser. No. 694,831

Int. Cl. A23b *5/00;* A23l *3/00*

U.S. Cl. 99—161 14 Claims

A process of pasteurizing liquid whole eggs which consists of separating the eggs from the shells and forming a homogeneous mixture. Then a food grade bivalent metal ion material selected from the group consisting of calcium, zinc and mixtures thereof is dissolved therein. Thereafter an alkali polyphosphate material is added thereto and the mixture is then heated to a pasteurization temperature of 125° to 145° F. for from 0.5 to 10 minutes. In the alternative a food grade alkali agent can be incorporated therein to raise the pH thereof from about 0.5 to 2.5 units above the natural pH of the eggs prior to pasteurization.

3,561,981
METHOD FOR COATING CEREAL WITH ICE CREAM PRODUCTS

James E. Roe, Wayne, N.J., Joseph Markus, Hicksville, N.Y., and Edwin C. Breeding, Riverside, Conn., assignors to National Biscuit Company, a corporation of New Jersey

Filed May 15, 1967, Ser. No. 638,440
Int. Cl. A23l *1/10*
U.S. Cl. 99—166 6 Claims

A ready-to-eat breakfast cereal is prepared which, upon addition of milk, develops the characteristic flavor of ice cream. The product is prepared by first precoating cereal particles, with a binder, which is preferably sugar syrup, and while still tacky, applying a dry flavoring composition, consisting essentially of a dry ice cream product, such as freeze-dried ice cream, spray-dried ice cream, powdered ice cream mixes and in general, any dehydrated ice cream product. The finished goods, after drying, contain 15–66% cereal material, 1–50% sugar, and 5–35% flavoring composition.

3,561,982
METHOD FOR PACKING FOOD IN PLASTIC CONTAINERS

Thomas F. Oeth, Dubuque, Iowa, assignor to Dubuque Packing Company, a corporation of Iowa

Filed Feb. 6, 1968, Ser. No. 703,402
Int. Cl. B65b *25/06;* B65d *43/02*
U.S. Cl. 99—174 2 Claims

A process of placing food products in rigid plastic containers and sealing the container to completely enclose the food product. Air is removed from the container before sealing by drawing a vacuum or the air may be displaced by another gas. The sealed container is heat processed to render the enclosed food product cooked and semi-perishable or sterile.

3,561,983
COMPOSITIONS HAVING ALKALI METAL TRIPOLYPHOSPHATE AND ALKALI METAL HYDROXIDE AND METHODS OF MAKING SAME

Louis Sair, Evergreen Park, and Irving Melcer, Park Forest, Ill., assignors to The Griffith Laboratories, Inc., Chicago, Ill., a corporation of Illinois

No Drawing. Continuation-in-part of application Ser. No. 658,349, Aug. 4, 1967. This application Feb. 24, 1970, Ser. No. 13,750
Int. Cl. A23b *1/01;* A23l *3/34*
U.S. Cl. 99—222 19 Claims

A particulate composition suitable for use in meat curing media, which composition includes the combination, either as a mechanical mix of controlled stability or as compacted granules of controlled stability, of particular amounts or proportions of alkali metal hydroxide and alkali metal tripolyphosphate.

A package having said particulate composition within a moisture-impervious barrier.

A method of making said compacted granules of said composition under controlled conditions and, if desired, placing said compacted granules within a moisture-impervious barrier.

3,561,984
COMPOSITION FOR GLAZING CERAMIC WARE

Richard Andrew Eppler, Timonium, Md., assignor to SCM Corporation, Cleveland, Ohio, a corporation of New York

No Drawing. Continuation-in-part of abandoned application Ser. No. 625,000, Mar. 22, 1967. This application May 27, 1969, Ser. No. 828,345
Int. Cl. C03c *3/04, 5/02;* C04b *33/00*
U.S. Cl. 106—48 7 Claims

This patent application describes a composition for glazing ceramic ware, preparations useful for making same, process for glazing bodies and substrates with same, and resulting coated ceramic bodies. The composition for glazing is characterized by containing a particulate vitrifiable material, at least a substantial fraction of which is in the particulate vitreous state said vitrifiable material, after melting into a fluent vitreous state, being self-nucleating or autocrystallizable or crystallizable into a substantially dimensionally stable continuous vitreous film in which are dispersed crystals of low thermal expansion. The glazing composition is particularly suited for glazing low expansion ceramic whiteware. Set forth as useful preparations are special particulate lithia-alumina-silica and alkaline earth-alumina-silica systems modified with flux in proportion controlled to restrict the development of a primary low thermal expansion crystalline phase, some of said preparations being modified with zirconia. The glazing process comprises partially coating a ceramic body with the composition for glazing, firing the coated body at a temperature sufficiently high and for a time sufficiently long for converting the composition into a fluent continuous vitreous surface coating, then adjusting the temperature to a value at which crystal growth in the surface coating occurs at a measurable rate, and finally cooling the resultant glazed ware at a rate consistent with keeping the ware integral. The invention shows particular advantage for making glazes of adjustable and low thermal expansion for thermal shock and mechanical shock resistant ceramic whiteware, for example, dinnerware, cookware, ceramic tile, acoustical tiles of the mineral type, sanitary ware, artware, and electrical and technical porcelain. The invention is specially adaptable to conventional "two-fire" glazing practice.

3,561,985
GLASS COLORANT COMPOSITIONS

Erwin C. Hagedorn, Oregon, and Dallas P. Hall, Toledo, Ohio, assignors to Owens-Illinois, Inc., a corporation of Ohio

Continuation-in-part of application Ser. No. 285,088, June 3, 1963. This application Sept. 16, 1966, Ser. No. 579,971
Int. Cl. C03c *3/08*
U.S. Cl. 106—54 5 Claims

Colorant-enriched frit glass compositions of the following ingredients are disclosed together with methods of producing colored glasses using same:

	Percent by weight		
	Composition 1	Composition 2	Composition 3
Ingredients:			
SiO_2	15-50		
Cr_2O_3	2-10	2-10	
R_2O	23-46		
Na_2O	X	21-30	10-40
K_2O	(1)	0-7	
B_2O_3	10.5-47	49-70	35-70
$R_2O + B_2O_3$	44-74		
Fe_2O_3		0-10	
CoO		0-8	0-43
MnO		0-18	0-23
PbO, BaO and ZnO		0-15	
NiO			[2] 0-18
Fe_2O_3			[2] 0-18
ZnO			[2] 0-43
CuO			[2] 0-28

[1] Less than 25% X.
[2] At least 2%.

3,561,986

BOROSILICATE GLASS COMPOSITION

Heinz Broemer, Hermannstein, Kreis Wetzlar, and Norbert Meinert, Wetzlar, Germany, assignors to Ernst Leitz G.m.b.H., Wetzlar, Germany

No Drawing. Filed May 1, 1967, Ser. No. 634,904
Claims priority, application Germany, July 16, 1966, L 54,091
Int. Cl. C03c *3/08, 3/10*
U.S. Cl. 106—53 7 Claims

An optical glass composition is disclosed which consists essentially of 42 to 52 mole percent of the glass formers B_2O_3 and SiO_2 with the mole ratio of B_2O_3 to SiO_2 ranging from 3, 4 to 4, 8. The composition further comprises 36 to 46 mole percent of the oxides of the elements of the group of zinc, cadmium, lead and lanthanum with the percentage of zinc oxide and/or cadmium oxide ranging from 12 to 22 mole percent, the percentage of lead oxide ranging from 8 to 24 mole percent, and the percentage of lanthanum oxide ranging from 2 to 10 mole percent. 10 to 15 mole percent of at least three oxides of the elements of the group of calcium, aluminium, titanium, zirconium, and tungsten.

3,561,987

CHROME BASE PLASTIC REFRACTORY

Louis J. Jacobs, Chicago, Robert E. Fisher, Clarendon Hills, and Carl J. Cherry, Chicago, Ill., assignors to Combustion Engineering, Inc., Windsor, Conn., a corporation of Delaware

No Drawing. Filed June 13, 1968, Ser. No. 736,592
Int. Cl. C04b *35/42*
U.S. Cl. 106—66 10 Claims

A chrome base plastic refractory material employing an acid phosphate binder, such as aluminum phosphate or phosphoric acid, and a coating on the chrome ore particles to prevent reaction between the basic constituents of the ore and the acid binder during storage. The coating solution contains sodium zinc hexametaphosphate, cupric acetate and sodium nitrite.

3,561,988

METHOD OF TREATING LIME

Norman L. Kelly, Paris, Ontario, Canada, assignor to Domtar Limited, Montreal, Quebec, Canada, a company of Canada

No Drawing. Filed May 16, 1968, Ser. No. 729,551
Claims priority, application Canada, June 8, 1967, 992,566
Int. Cl. C04b *7/34*
U.S. Cl. 106—118 6 Claims

A method of improving the rate of plasticity development of a finishing lime by soaking the hydrated lime in the presence of an admixture of a water-soluble compound of barium or strontium.

3,561,989

BLACK Fe-Cr OXIDE PIGMENT COMPOSITION

Horst Weber, Leverkusen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany, a corporation of Germany

No Drawing. Filed July 1, 1968, Ser. No. 741,258
Claims priority, application Germany, July 13, 1967, F 52,944
Int. Cl. C09c *1/22;* C01g *37/14;*
U.S. Cl. 106—302 7 Claims

Black enamel and ceramic coloring substance in the form of a Fe-Cr oxide having corundum structure and a molar composition of about

$$Fe_2O_3 \cdot (0.7-1.0)Cr_2O_3$$

and a process for the production thereof by annealing, e.g. at 1000 to 1300° C., a mixture of oxides and/or oxide-forming compounds, e.g. heat-decomposable hydroxides, acids, salts, etc., of iron, chromium, sodium and phosphorus, which mixture contains, per gram-atom of iron, the following constituents:

0.7 to 1.0 gram-atom of chromium
0.005 to 0.2 gram-atom of sodium
0.005 to 0.05 gram-atom of phosphorus

and thereafter grinding, washing and drying the annealed material, e.g. to a particle size of about 0.1 to 60 μm., preferably 2 to 20 μm.

3,561,990

FLUORESCENT INK AND METHOD FOR MAKING MATERIALS FLUORESCE

Hans Dressler, Monroeville, Pa., assignor to Koppers Company, Inc., a corporation of Delaware

No Drawing. Application June 14, 1966, Ser. No. 557,383, now Patent No. 3,452,075, dated June 24, 1969, which is a continuation-in-part of application Ser. No. 433,216, Feb. 16, 1965. Divided and this application May 8, 1968, Ser. No. 749,229
Int. Cl. H01j *31/20*
U.S. Cl. 117—33.5 4 Claims

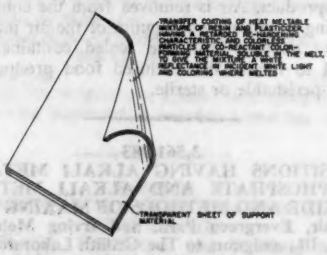
Substrates are made to exhibit fluorescence upon exposure to ultraviolet light through modification of the surface of the substrate by application of a mixture of specific phenylsulfonyl cinnamic type compounds and a suitable carrier.

3,561,991

TRANSFER RECORD SHEET FOR MAKING MULTIPLE COPIES OF A SINGLE HEAT IMPRESSION

Henry H. Baum, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio, a corporation of Maryland

Filed Aug. 28, 1968, Ser. No. 756,008
Int. Cl. B41m *5/10*
U.S. Cl. 117—36.1 5 Claims

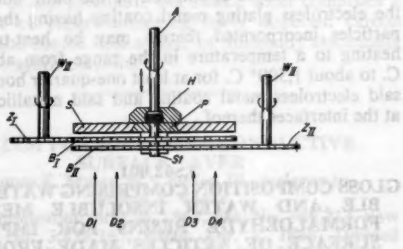

TRANSFER COATING OF HEAT MELTABLE MIXTURE OF WAXES AND PLASTICIZERS, HAVING A PIGMENTED RE-HUMECTING CHARACTERISTIC AND COLORLESS PARTICLES OF CO-REACTANT COLOR-FORMING MATERIAL SOLUBLE IN THE MELT TO GIVE THE MIXTURE A WHITE REFLECTANCE IN INCIDENT WHITE LIGHT AND COLORING WHERE MELTED
TRANSPARENT SHEET OF SUPPORT MATERIAL

This invention relates to a self-revelation heat-activatable sheet-like transfer printing member comprising a translucent support sheet and a back-coating of heat-tackifiable transfer ink that normally is solid and normally reveals a light-reflecting surface at the interface of the support sheet and the coating, as viewed from the front uncoated side, but is irreversibly darkened when and where heated to the tackifiable condition. The heat-tackified coating is an ink-source for making a transfer print against each of a number of light-colored copy-receiving sheets brought into pressure contact therewith in succession. An image made by a hot image-former applied to the sheet, preferably to the uncoated side, leaves a corresponding dark image against the light surface at the interface, to be seen through the support sheet.

3,561,992
REPRODUCTION TRANSFER SHEET AND METHOD OF MAKING
Edgar Breidthardt, Dusseldorf, Germany, assignor to Ancar A.G., Zug, Switzerland
Continuation-in-part of applications Ser. No. 243,466, Dec. 16, 1962, and Ser. No. 498,978, Oct. 20, 1965. This application Nov. 9, 1967, Ser. No. 681,696
Claims priority, application Germany, Dec. 14, 1961, R 31,693
Int. Cl. B41m *5/10*
U.S. Cl. 117—36.3 9 Claims

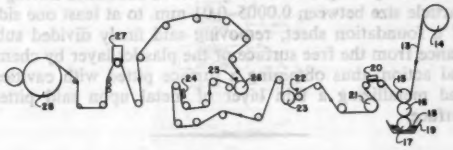
The present invention relates to reproduction transfer sheets prepared by coating the upper sides of white or lightly colored sheets with a solution of polyethylene in tetrachloroethylene containing dark colored pigments or dyes, at a temperature not substantially lower than 80° C. After removal of the tetrachloroethylene solvent a white or lightly colored coating of polyethylene mixed with, for example, titanium dioxide, is applied over the initial colored coating in the form of a tetrachloroethylene solution, at a temperature below 80° C. After removal of the solvent, a white or lightly colored coating is applied to the reverse side of the sheet. This coating consists of microcrystalline wax to which titanium dioxide or other light colored pigment may be added as a brightener. If desired, other materials may also be included in the coating, as for example, magnesium stearate for the purpose of increasing the adherence of the coating.

3,561,993
METHOD OF PRODUCING CYCLICALLY EXTENDING LAYERS
Walter Geffcken, Mainz, Germany, assignor to JENAer Glaswerk Schott & Gen., Mainz, Germany, a corporation of Germany
Filed Apr. 10, 1968, Ser. No. 720,146
Claims priority, application Germany, Apr. 11, 1967, J 33,412
Int. Cl. B29d *11/00;* B44d *5/06*
U.S. Cl. 117—38 6 Claims



It is known to deposit metallic or dielectric layers by vaporization on a straight stripe-formed substrate, whereby the thickness of the layers is linearly increasing along the stripe. Interference filters of such layers show a regular shift of the transmission curve from shorter to longer wavelengths. A recent development shows that it is possible to deposit similar layers in a cyclical form by disposing between the vaporizer and the substrate two diaphragms forming between them a radial slit, whereby these diaphragms are rotated with different speeds relatively to each other about a common axis of rotation. Filters made according to this method have the disadvantage that along one part of the cycle the thickness is steadily increasing, while along the following part it is steadily decreasing. The disclosure shows how the relative movement of the substrate and the diaphragms must be kept for overcoming the said disadvantage and for getting layers, the thickness of which has a uniform change of thickness along the whole cycle with only one interruption where the wavelength drops from the highest to the lowest value.

3,561,994
METHOD OF MAKING MOISTURE RESISTANT PAPERBOARD
James P. Dwyre, Stamford, Conn., assignor to Westvaco Corporation, New York, N.Y., a corporation of Delaware
Filed May 3, 1967, Ser. No. 635,829
Int. Cl. B65d *5/56;* D21h *1/36*
U.S. Cl. 117—46 5 Claims



In a liquid container formed of polyethylene coated paperboard, wicking through exposed raw edges on the interior of the carton is substantially reduced by treating the paperboard with small quantities of a moisture resistant material, such as wax, prior to the application of the polyethylene coating. The wax is applied to the paperboard in molten form in the range of approximately 1 to 7 percent by weight of the uncoated paperboard and driven evenly and uniformly throughout the board by the subsequent application of heat.

3,561,995
METHOD OF ACTIVATING A POLYMER SURFACE AND RESULTANT ARTICLE
Sidney Hsi-Lin Wu, Berkley, and Edgar John Seyb, Jr., Oak Park, Mich., assignors to M & T Chemicals Inc., New York, N.Y., a corporation of Delaware
No Drawing. Filed Apr. 3, 1967, Ser. No. 627,864
Int. Cl. B44d *1/092*
U.S. Cl. 117—47 4 Claims

Activated polymer surfaces adaptable for the acceptance of metal deposits are prepared by contacting a clean, non-active, unconditioned polymer surface with a liquid activating composition containing at least one reactive conditioning agent selected from an acidic medium, salts of an acidic medium, a metal hydroxide, a metal oxide, and an oxygen-containing organic medium, in combination with at least one ion of a metal selected from the group consisting of platinum, palladium, silver, gold, iron, nickel, cobalt, copper, and rhodium.

3,561,996
METHOD OF IMPROVING ADHESION OF VINYL ADDITION POLYMER AQUEOUS-BASED COMPOSITION SEALANTS, ETC.
Harold C. Young, Philadelphia, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa., a corporation of Delaware
No Drawing. Filed May 27, 1968, Ser. No. 732,072
Int. Cl. B44d *1/14*
U.S. Cl. 117—62.1 14 Claims

In accordance with the present invention, it has been found that coating the surface of a caulk or painted layer

comprising a thermoplastic polymer, such as a vinyl addition polymer, with certain types of silanes, surprisingly increases the adhesion of the caulk to many substrates, and especially to those of siliceous type, such as glass, ceramics, porcelain, concrete, etc.

3,561,997

PROCESS FOR METAL COATING A PLASTIC LAYER

John Arne Wallinder, Surrey, England, assignor to Perstorp AB, Perstorp, Sweden, a Swedish joint-stock company

No Drawing. Filed Apr. 25, 1968, Ser. No. 724,284
Claims priority, application Great Britain, May 2, 1967, 20,293/67
Int. Cl. B44c 5/02, 1/22
U.S. Cl. 117—68 4 Claims

Method of producing a laminated material containing at least one thin layer of metal, by applying a layer of plastics material containing in a distributed condition 10–40% by weight of a finely divided substance having a particle size between 0.0005–0.01 mm. to at least one side of a foundation sheet, removing said finely divided substance from the free surface of the plastics layer by chemical action, thus obtaining a surface pitted with cavities, and metallizing a thin layer of metal upon said pitted surface.

3,561,998

METHOD OF PRODUCING DECORATIVE COARSELY TEXTURED FABRICS HAVING CRUMPLED PAPER YARN

Stuart D. Snyder, 9708 Fulmer St., Philadelphia, Pa. 19115

Filed Mar. 29, 1967, Ser. No. 626,763
Int. Cl. B44d 1/14; D21h 1/28
U.S. Cl. 117—76 14 Claims

A method of making a decorative article utilizing a coarsely textured fabric having crumpled paper yarn with irregular and nonuniform cross sections by soaking in an unplasticized polymer composition, passing the fabric between pressure rollers for removing excess composition therefrom, allowing the fabric to dry and fusing the polymer at least partially by the application of heat, soaking the fabric in a plasticized polymer composition, passing the fabric between pressure rollers to remove excess composition therefrom, and drying the fabric and fusion of the polymer, and the article produced thereby in which the fabric is protected by a thin tough film of vinyl surrounding the individual yarn bundles, thereby retaining the texture of the fabric surface, and providing various color effects and patterns.

3,561,999

METALLIC STEARATE COATED CLAYS AND THE PROCESS OF PRODUCING SAME

Joseph Iannicelli, Macon, Ga., assignor to J. M. Huber Corporation, Locust, N.J., a corporation of New Jersey

No Drawing. Filed Dec. 6, 1967, Ser. No. 688,356
Int. Cl. C08h 17/06; C09c 3/00
U.S. Cl. 117—100 6 Claims

The disclosure covers the coating of kaolin clays with a thin uniform film of water insoluble metallic stearate and the clays so coated. The process includes the steps of applying an aqueous dispersion of the stearate to the clay, followed by mixing, drying and pulverizing.

3,562,000

PROCESS OF ELECTROLESSLY DEPOSITING METAL COATINGS HAVING METALLIC PARTICLES DISPERSED THERETHROUGH

Konrad Parker, Park Ridge, Ill., assignor to General American Transportation Corporation, Chicago, Ill., a corporation of New York

Filed Oct. 25, 1968, Ser. No. 770,573
Int. Cl. C23c 3/02
U.S. Cl. 117—130 36 Claims

There are disclosed herein processes for electroless metallizing workpieces to provide thereon an electroless plating metal coating incorporating therein metallic particles, workpieces produced by such processes and plating baths which are useful in the practice of such processes and for producing such workpieces. These processes generally comprise contacting the workpieces with an electroless metallizing bath consisting of an aqueous solution of an electroless metal plating salt and a chemical reducing agent therefor and a quantity of metallic particles, wherein said particles are essentially insoluble in said bath and inert and non-catalytic and non-poisonous with respect thereto and non-displacing with respect to the electroless plating metal ions in said bath, the particles being present in said bath in an amount by weight no greater than about ten times the weight of the electroless plating metal in said bath expressed as free metal, and maintaining the particles in suspension throughout the bath during the metallizing of the workpiece; the metallizing bath may contain nickel ions or cobalt ions or mixtures thereof as a source of metal and may contain hypophosphite anion or an alkylborazane or a borohydride as the reducing agent, or may contain copper ions as a source of metal with formaldehyde as the reducing agent; the metallic particles are selected from chromium, molybdenum, tungsten, boron, titanium, vanadium, zirconium, niobium, tantalum and alloys thereof; the metallic particles have dimensions in the range from about 0.1 micron to 50 microns; these metallic particles may be maintained in suspension in the bath by mechanical agitation, by passing the bath including the particles over the workpiece, by passing streams of minute bubbles of gas through the bath, by agitation and movement of the workpiece within the bath, or by slowly rotating the workpiece in conjunction with the rapid circulation of the bath; additionally, the electroless plating metal coating having the metallic particles incorporated therein may be heat-treated by heating to a temperature in the range from about 200° C. to about 1,300° C. for at least one-quarter hour to bond said electroless metal coating and said metallic particles at the interfaces thereof.

3,562,001

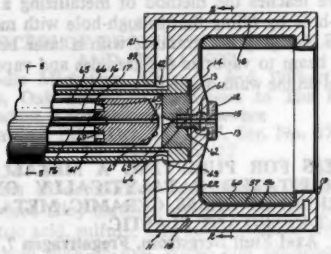
GLOSS COMPOSITION COMPRISING WATER SOLUBLE AND WATER INSOLUBLE MELAMINE FORMALDEHYDE RESINS FOR IMPROVING SURFACE OF ARTICLES MADE FROM MELAMINE RESINS AND METHOD OF APPLICATION THEREOF

Patrick J. McGuire, Mount Vernon, N.Y., assignor to Commercial Decal, Inc., Mount Vernon, N.Y., a corporation of New York

No Drawing. Filed Feb. 20, 1968, Ser. No. 706,769
Int. Cl. B29c 3/00; B32f 27/00, 27/42; B44c 1/20, 3/12
U.S. Cl. 156—242 10 Claims

The gloss, lustre and abrasion resistance of articles molded from melamine resins are improved by means of a composition formed from a water soluble and water insoluble melamine resins, a thickening agent, plasticizer, solvent and catalyst. The composition is applied to the foil used to decorate the ware before application of the foil to the ware.

3,562,002
METHOD AND APPARATUS FOR VAPOR DEPOSITION
Hugh R. Smith, Jr., Piedmont, Calif., assignor to Air Reduction Company, Incorporated, New York, N.Y., a corporation of New York
Continuation-in-part of application Ser. No. 637,386, May 10, 1967. This application Apr. 24, 1968, Ser. No. 725,264
Int. Cl. C23c *13/04, 13/12*
U.S. Cl. 117—93.3 14 Claims



A method and apparatus are described for feeding wire into a vapor source crucible in a vacuum deposition system to either replenish material vaporized in the crucible or to produce a uniform coating on the wire. The wire is urged into the crucible through a heated guide member upon which vapor will not condense and solidify.

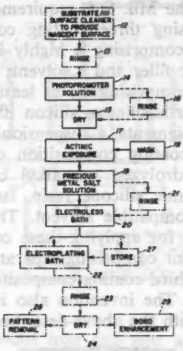
3,562,003
ELECTROSTENCIL
Alfred Frohlich, Hellerup, Denmark, assignor to Aktieselskabet for Kontor Kemi, Glostrup, Denmark, a corporation
Filed July 7, 1967, Ser. No. 651,778
Claims priority, application Denmark, July 11, 1966, 3,572/66
Int. Cl. H01l *1/06*
U.S. Cl. 117—201 10 Claims

A stencil blank includes a stencil sheet which is capable of being perforated by electric sparks, the stencil sheet being juxtaposed with and supported on a backing sheet made of an electrically conductive material. The backing sheet may comprise electrically conductive black glazed paper. The stencil sheet may be formed entirely of an inherently electrically conductive syntheti cresin. In a modified form of the invention, the stencil sheet comprises a thin sheet of paper containing finely dispersed carbon particles and coated with a layer of inherently electrically conductive synthetic resin.

3,562,004
SYSTEM FOR FORMING A CONDUCTIVE SURFACE LAYER
Thomas E. Myers, St. Charles, Ill., assignor to Norma J. Vance
Original application July 30, 1964, Ser. No. 386,213, now Patent No. 3,436,257, dated Apr. 1, 1968. Divided and this application June 3, 1968, Ser. No. 790,179
Int. Cl. H01j *29/18*
U.S. Cl. 117—211 2 Claims

An electrically conductive silicate surface is provided in which a normally conductive silicate mass has its surface penetrated by a layer of electrically conductive material, e.g., silicate of a metal selected from the class consisting of titanium, indium, tin and cadmium, which layer extends integrally into the silicate mass at the surface. Apparatus for producing the conductive silicate article is also provided.

3,562,005
METHOD OF GENERATING PRECIOUS METAL-REDUCING PATTERNS
Michael Anthony DeAngelo, Hamilton Square, and Donald Jex Sharp, Princeton, N.J., assignors to Western Electric Company, Incorporated, New York, N.Y., a corporation of New York
Filed Apr. 9, 1968, Ser. No. 719,976
Int. Cl. B44d *1/50*; H05k *3/12, 3/18*
U.S. Cl. 117—212 38 Claims



A pattern capable of reducing thereon a precious metal is generated on a suitable substrate by first coating selected portions of the substrate with a solution, called a photopromoter, which contains a metal salt. The metal salt possesses two characteristics:

(a) the oxidation state of the salt (i.e., of the metal ion) is alterable (either increasable or decreasable) by exposure of the salt to radiation of the proper wavelength; and

(b) in either the original or the altered oxidation state (but not in both states) the salt is capable of reducing a precious metal, e.g., a metal of the platinum group such as palladium, platinum or rhodium, from a salt thereof.

The photopromoter-coated substrate is next selectively exposed to the proper wavelength radiation to produce a pattern of the photopromoter salt capable of reducing the precious metal. The remainder of the salt is incapable of reducing the precious metal.

The pattern may then be exposed to a solution containing a salt of the precious metal to reduce thereon the precious metal. Ultimately, the precious metal pattern may be used to reduce electrolessly a metal, such as copper, to produce a metallic pattern, such as an electric circuit pattern.

3,562,006
INFRARED SOURCE
Hugh R. Carlon, Edgewood, Md., assignor to the United States of America as represented by the Secretary of the Army
Original application May 24, 1967, Ser. No. 642,662, now Patent No. 3,450,864. Divided and this application Dec. 27, 1968, Ser. No. 840,542
Int. Cl. H05 *3/10*
U.S. Cl. 117—213 4 Claims

Structure treated with a coating and pitted with an abrasive thereby emitting infrared spectrum meeting or exceeding Globar emissivities in air. A metal envelope encasing a resistance wire wound upon a core and an insulating material therebetween, axial lead of the ends

of the resistance wire connected to an external source of electrical energy, and the textured and carbon coated external surface of the said metal envelope.

3,562,007

FLAME-PROOF, MOISTURE RESISTANT COATED ARTICLE AND PROCESS OF MAKING SAME

Lawrence G. Bockstie, Jr., Bradford, Pa., assignor to Corning Glass Works, Corning, N.Y., a corporation of New York

No Drawing. Filed Apr. 25, 1968, Ser. No. 724,260
Int. Cl. B44d *1/14;* **H01b** *3/46*
U.S. Cl. 117—218 **29 Claims**

A flame-proof, moisture resistant coating system especially suitable for providing coatings on electrical resistors which meet the Mil. Std. requirements for moisture resistance comprising three coating compositions: said first composition comprising a highly inorganic silicone resin, an inorganic filler and a solvent; said second coating composition comprising an at least partially hydrolyzed tetraalkyl orthosilicate, silicon dioxide, aluminum oxide, inorganic pigments, a suspension agent and a solvent; said third coating composition comprising an at least partially hydrolyzed tetraalkyl orthosilicate, predominantly inorganic silicone resin, suspended resinous particles and a compatible solvent. The invention also includes a process for applying these coating systems to an electrical resistor comprising separately applying said first, second and third coating compositions in the stated order and curing. The invention also includes electrical resistors coated with the above-described coating system.

3,562,008

METHOD FOR PRODUCING A RUTHENIUM COATED TITANIUM ELECTRODE

Aleksandrs Martinsons, Wadsworth, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa., a corporation of Pennsylvania

Filed Oct. 14, 1968, Ser. No. 767,281
Int. Cl. B01k *3/04, 3/06*
U.S. Cl. 117—221 **12 Claims**

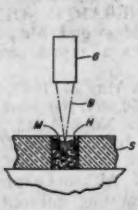
A method for producing a coated anode having a titanium base member comprising the steps of applying a plurality of layers of an organic mixture containing a noble metal compound and a titanium compound to the base member and then heating such layers to a temperature sufficient to volatilize and/or to decompose the organic matter and to form mixed metal oxides. The temperature is below the temperature at which substantial titanium dioxide crystals will form.

3,562,009

METHOD OF PROVIDING ELECTRICALLY CONDUCTIVE SUBSTRATE THROUGH-HOLES

Benjamin Howell Cranston and Richard Allen Wydro, Sr., Trenton, N.J., assignors to Western Electric Company, Incorporated, New York, N.Y., a corporation of New York

Filed Feb. 14, 1967, Ser. N. 615,968
Int. Cl. H05k *1/04;* **C23c** *11/00*
U.S. Cl. 117—227 **2 Claims**



This disclosure teaches specifically the method of metallizing a substrate or dielectric through-hole by directing a laser beam or an electron beam on a supply of metal to vaporize the metal and vapor deposit the metal on the walls of the substrate through-hole. This disclosure also teaches the method of drilling a substrate through-hole with a laser beam or an electron beam and metallizing the through-hole as stated above. Further, this disclosure teaches the method of metallizing a substrate through-hole by placing a supply of metal over a substrate through-hole and engaging the metal supply with a laser beam or an electron beam to melt the supply and flow of melted supply through the through-hole. In addition, the present disclosure teaches the method of metallizing a substrate through-hole by filling the through-hole with metal granules, and engaging the granules with a laser beam or an electron beam to vaporize the granules and vapor deposit the metal on the walls of the through-hole.

3,562,010

PROCESS FOR PURIFYING A METAL LAYER PRECIPITATED CATALYTICALLY ONTO A CARRIER OF GLASS, CERAMIC, METAL OR A HEAT-RESISTANT PLASTIC

Axel Emil Bergstrom, Fregattvagen 7, Lidingo, Sweden

No Drawing. Continuation-in-part of application Ser. No. 545,563, Apr. 27, 1966. This application Feb. 17, 1969, Ser. No. 799,937
Claims priority, application Sweden, Apr. 30, 1965, 5,715/65
Int. Cl. C03c *17/06;* **B44d** *1/18*
U.S. Cl. 117—227 **5 Claims**

A process for purifying nickel, chromium or cobalt layers precipitated catalytically in the presence of hypophosphite onto a carrier of glass, ceramic, metal or heat-resistant plastic materials, such as fluorocarbon plastics or silicon plastics, wherein the metal layer is treated at a temperature of between 330° and 420° C. with hydrogen gas, for a length of time sufficient to increase considerably the electrical conductivity of the layer.

3,562,011

INSULATING COATING COMPRISING AN AQUEOUS MIXTURE OF THE REACTION PRODUCT OF CHROMIUM NITRATE AND SODIUM CHROMATE, PHOSPHORIC ACID AND COLLOIDAL SILICA AND METHOD OF MAKING THE SAME

Robert G. Hirst and Daniel W. McMorris, Pittsfield, Mass., assignors to General Electric Company, a corporation of New York

No Drawing. Filed Apr. 26, 1968, Ser. No. 724,636
Int. Cl. C04b *35/14*
U.S. Cl. 117—234 **15 Claims**

Electrically insulating coating for strand annealed magnetic silicon steel is composed of an aqueous mixture of (1) reaction product of chromium nitrate and sodium chromate, (2) phosphoric acid and (3) colloidal silica.

3,562,012

PROCESS FOR THE PREPARATION OF PURE LACTULOSE FROM CRUDE LACTULOSATE SYRUPS

Hans Reinicke, Mannheim, Senta Leonhauser, Ilvesheim, near Mannheim, and Rudolf Weidenhagen, Ulversheim uber Mainz, Germany, assignors to Boehringer Mannheim Gesellschaft mit beschrankter Haftung, Mannheim-Waldhof, and Suddeutsche Zucker-Aktiengesellschaft, Mannheim, Germany, both corporations of Germany

No Drawing. Filed Nov. 5, 1968, Ser. No. 773,671
Claims priority, application Germany, Nov. 7, 1967, P 16 43 834.9
Int. Cl. C13k *9/00;* **C13j** *1/04*
U.S. Cl. 127—46 **13 Claims**

Process for preparing pure lactulose which comprises introducing into a dilute aqueous solution of a crude lactulose syrup about 0.7 to 4 parts by weight of calcium

oxide per part by weight of lactulose in the crude syrup at a temperature of about 0 to 15° C., allowing the mixture to stand while maintaining the temperature substantially constant, separating off the calcium lactulosate thereby formed while still maintaining this temperature, washing the separated calcium lactulosate with cold water, resuspending the washed calcium lactulosate in water at a temperature of 0 to 15° C., freeing the lactulose from its salt and recovering the free, pure lactulose.

3,562,013

PROCESS OF DEOXIDIZING TITANIUM AND ITS ALLOYS

Floyd Louis Mickelson, Chicago, and Wilbert Joseph Roberts, Oak Lawn, Ill., assignors to The Diversey Corporation, a corporation of Delaware

No Drawing. Filed Oct. 23, 1967, Ser. No. 677,086
Int. Cl. C23g 1/12
U.S. Cl. 134—3 **12 Claims**

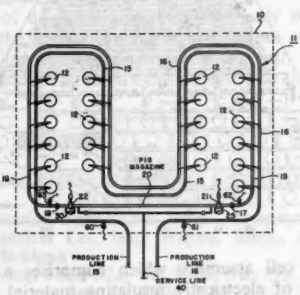
A process of deoxidizing and cleaning titanium and titanium-based alloy surfaces using a treatment bath containing nitric acid, sulfuric acid and a material which supplies the acid fluoride ion. Water and phosphoric acid can be included in the bath.

3,562,014

PIPELINE SCRAPER LAUNCHING SYSTEM

Thomas W. Childers, Woodland Hills, and Joseph A. Burkhardt, Chatsworth, Calif., assignors to Esso Production Research Company

Filed May 16, 1969, Ser. No. 825,284
Int. Cl. B08b 9/04
U.S. Cl. 134—8 **25 Claims**



A pipeline scraper launcher for submerged oil and gas well production systems. A tubular magazine is arranged in a submerged oil and gas well production system and each end thereof is connected to a production pipeline which extends to the surface. A service conduit connects the interior of the tubular magazine to the surface. A plurality of pipeline scraper pigs are pumped into the tubular magazine through one of the production pipelines. Then, by proper manipulation of valves arranged on the tubular magazine and service conduit and application of fluid pressure, each scraper pig is hydraulically launched from the tubular magazine into either one of the production pipelines.

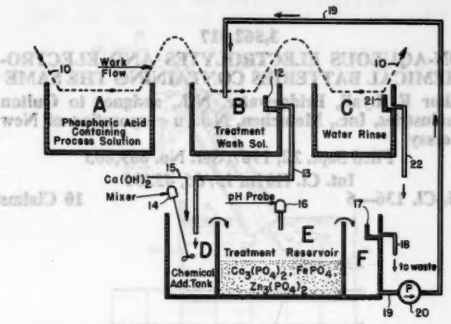
3,562,015

TREATMENT OF PHOSPHATE TYPE CARRY-OVER ON METAL WORKPIECES

Leslie E. Lancy, Ellwood City, Pa., assignor to Lancy Laboratories, Inc., Zelienople, Butler County, Pa. a corporation of Pennsylvania

Filed July 5, 1968, Ser. No. 742,693
Int. Cl. B01d 21/00; C02b 1/30; C02c 5/00
U.S. Cl. 134—13 **9 Claims**

A method for removing and neutralizing phosphate type waste or carry-over on workpieces from a metal finishing bath. The carry-over usually consists of large concentrations of iron or zinc phosphates or both and some free phosphoric acid which has been used for phosphatizing, pickling, or metal surface preparation. An aqueous chemical treatment wash solution is used having a pH of less than about 8 and is applied to surfaces of the workpieces during their movement; the solution as thus contaminated is circulated in a system having a treatment solution reservoir or tank, and is subjected to the introduction of hydrated lime, slaked lime, or powdered limestone, either immediately before its introduction into the reservoir or at the time of its introduction, in an amount determined to be sufficient to precipitate and settle-out iron and zinc as well as calcium phosphates in the reservoir. Thereafter, the reconditioned solution is moved from the treatment reservoir back to a workpiece treating tank to provide a continuous washing-off of the surfaces of the metal workpieces. Care is taken to assure that the solution as returned to the treating tank is, for all practical purposes, free of dissolved calcium compounds. An alternative is to employ a caustic soda addition to the solution for precipitating the metal phosphates and to employ a small quantity of calcium ion added as a secondary treatment to the solution for the purpose of removing the minor constituent of the carry-over, namely, free phosphoric acid.

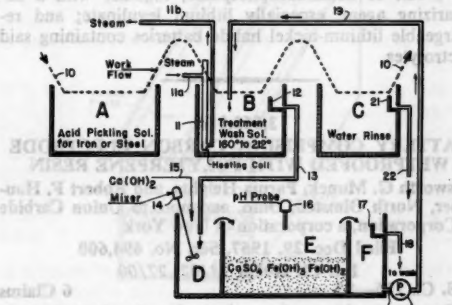


3,562,016

CONTINUOUS TREATMENT OF CARRY-OVER ON FERROUS METAL WORKPIECES

Leslie E. Lancy, Ellwood City, Pa., assignor to Lancy Laboratories, Inc., Zelienople, Pa., a corporation of Pennsylvania

Filed July 5, 1968, Ser. No. 742,747
Int. Cl. B01d 21/00; C02b 1/30; C02c 5/00
U.S. Cl. 134—13 **6 Claims**



Ferrous metal-containing workpieces which have been subjected to a pickling or other treatment in an acid bath

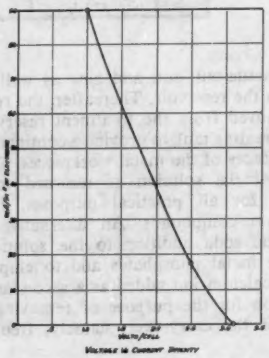
have potentially polluting iron salt waste or carry-over solution on their surfaces that is fully reacted and neutralized by a calcium containing aqueous chemical solution, without forming undesirable calcium deposits and while enabling efficient precipitation of iron compounds. The workpiece may be subsequently subjected to a rinse water wash without fear of contaminating a stream if the wash water is to be discharged therein. The aqueous treating solution is continuously reconditioned and reused and substantially fully removes, reacts with or neutralizes the waste carry-over on a workpiece that is being moved continuously into an aqueous washing bath.

3,562,017

NON-AQUEOUS ELECTROLYTES AND ELECTROCHEMICAL BATTERIES CONTAINING THE SAME

Arthur E. Lyall, Bridgewater, N.J., assignor to Gulton Industries, Inc., Metuchen, N.J., a corporation of New Jersey

Filed Sept. 22, 1967, Ser. No. 669,803
Int. Cl. H01m *15/06, 43/06*
U.S. Cl. 136—6 **10 Claims**



Non-aqueous electrolytes, having particular utility for use in lithium-nickel halide batteries, comprising solutions, in an organic solvent selected from the group propylene carbonate, gamma, butyrolactone, N-methyl-2-pyrrolidone and sulfoxides which are liquid at room temperature, notably dimethylsulfoxide, of a solute comprising a salt of hexafluorophosphate, together with a depolarizing agent, especially lithium levulinate; and rechargeable lithium-nickel halide batteries containing said electrolytes.

3,562,018

BATTERY COMPRISING CARBON ELECTRODE WETPROOFED WITH POLYTERPENE RESIN

Ellsworth G. Munck, Parma Heights, and Robert F. Hauser, North Olmsted, Ohio, assignors to Union Carbide Corporation, a corporation of New York

Filed Dec. 29, 1967, Ser. No. 694,600
Int. Cl. H01m *13/02, 27/00*
U.S. Cl. 136—83 **6 Claims**

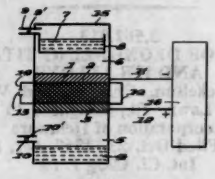
Gas permeable carbon electrodes for batteries are rendered repellent to battery electrolyte by polyterpene resin on at least the electrochemically active surfaces of the electrodes.

3,562,019

RESERVE FUEL CELL BATTERY

Dieter Spahrbier, Frankfurt am Main, Germany, assignor to Varta Aktiengesellschaft, Frankfurt am Main, Germany

Filed Apr. 12, 1968, Ser. No. 720,940
Claims priority, application Germany, July 8, 1967, V 34,028
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 **17 Claims**



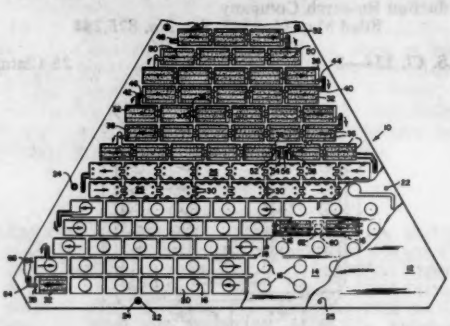
Reserve fuel cell battery with liquid oxygen and hydrogen gas yielding materials and electrolyte stored therein.

3,562,020

SOLAR CELL ASSEMBLY

Ronald E. Blevins, Torrance, Calif., assignor to TRW Inc., Redondo Beach, Calif., a corporation of Ohio

Filed May 31, 1966, Ser. No. 553,969
Int. Cl. H01l *15/02*
U.S. Cl. 136—89 **6 Claims**



A solar cell assembly which comprises a substrate, and a grid of electrically insulating material adhesively joined to a surface of the substrate. The grid is formed with an array of openings therein which are shaped to accommodate one or more solar cells along the lateral extent of each opening. Thus, according to one aspect of the invention, the grid serves as a jig for locating and assembling a multiplicity of solar cells in a desired array.

The solar cells are arranged within the openings so as to substantially fill the lateral extent of the openings, and are adhesively joined to the substrate surface. Means are provided for electrically connecting at least a plurality of the solar cells in circuit with each other.

3,562,021

HEATING DEVICE FOR AT LEAST ONE THERMOELECTRIC BATTERY ADAPTED TO FURNISH CURRENT FOR A LIMITED TIME PERIOD

Hans-Werner Kämpfer, Rothenbach, Pegnitz, Klaus Biele, Lauf-Kotzenhof, and Rudolf Schlosser, Ruckersdorf, Germany, assignors to DIEHL, Nuremberg, Germany

Filed July 3, 1968, Ser. No. 742,299
Claims priority, application Germany, July 4, 1967, P 15 39 283.3
Int. Cl. H01v *1/00*
U.S. Cl. 136—205 **10 Claims**

Heating device for at least one thermoelectric battery adapted to supply current for a limited period of time

which comprises an oxidator, a rapidly combustible heating component surrounding said oxidator, said heating component containing a reducing agent, a melting substance surrounding said heating component and a nonmelting layer separating said heating component from said melting substance, and which also comprises means for igniting said heating component.

3,562,022

METHOD OF DOPING SEMICONDUCTOR BODIES BY INDIRECT ION IMPLANTATION

Gordon A. Shifrin, Malibu, Calif., assignor to Hughes Aircraft Company, Culver City, Calif., a corporation of Delaware

Filed Dec. 26, 1967, Ser. No. 693,216
Int. Cl. H01l *7/54*
U.S. Cl. 148—1.5 7 Claims

Method of doping a semiconductor body by applying a layer of the desired dopant on the surface of the semiconductor, irradiating this dopant layer with a beam of inert ions to drive atoms of the dopant into the semiconductor body.

3,562,023

MANGANESE COATING BATH WITH MOLYBDENUM

Jack M. Courier, Farmington, Mich., assignor to Whitefield Chemical Co., Inc., Wayne, Mich., a corporation of Michigan

No Drawing. Filed May 15, 1968, Ser. No. 729,354
Int. Cl. C23f *7/10*
U.S. Cl. 148—6.15 12 Claims

Composition and method for producing a fine grained manganese-molybdenum phosphate complex as a coating on a metal surface, primarily for break-in wear applications.

3,562,024

COBALT-NICKEL BASE ALLOYS CONTAINING CHROMIUM AND MOLYBDENUM

Gaylord D. Smith, Timonium, Md., assignor, by mesne assignments, to Standard Pressed Steel Company, a corporation of Pennsylvania

No Drawing. Continuation-in-part of applications Ser. No. 452,054, Apr. 30, 1965; Ser. No. 565,088, July 14, 1966; Ser. No. 584,029, Aug. 18, 1966; and Ser. No. 637,613, Apr. 10, 1967. This application Dec. 4, 1967, Ser. No. 687,471
The portion of the term of the patent subsequent to Dec. 5, 1984, has been disclaimed
Int. Cl. C22f *1/10*
U.S. Cl. 148—11.5 10 Claims

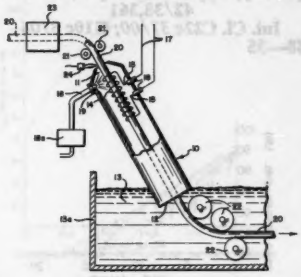
Corrosion-resistant alloys which can be work-strengthened to have a combination of very high ultimate tensile strength, yield strength and ductility, the alloys containing as essential elements, by weight, 33 to 37% nickel, 7 to 10.5% molybdenum, 19 to 21% chromium, carbon in a maximum amount of 0.025%, the balance being cobalt in the proportion of at least 33%, the sum of cobalt and nickel being from 66 to 74% and said sum divided by the percent chromium being from 3.1 to 3.9.

3,562,025

DESCALING COPPER RODS

Clermont J. Snyder and Jack P. Moore, Hastings-on-Hudson, N.Y., assignors to Anaconda Wire and Cable Company

Filed Apr. 1, 1969, Ser. No. 812,283
Int. Cl. C21d *1/42*
U.S. Cl. 148—13.2 8 Claims



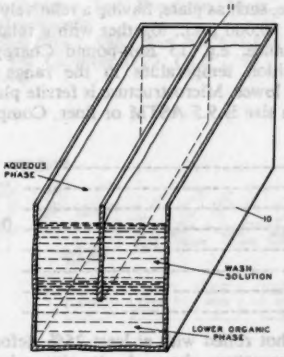
Oxide scale is removed from a copper rod by continously introducing the rod at a temperature not exceeding 1000° F. into a tubular chamber in which the rod is inductively heated to a temperature above 1100° F. (up to 1400° F.) and exposed to a reducing atmosphere to reduce the oxide scale to metallic copper. Immediately thereafter, the rod is quenched in a liquid coolant to a temperature below that at which any substantial reoxidation can occur.

3,562,026

METHOD OF QUENCHING EMPLOYING WASH SOLUTION

Delbert J. Massey, Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo., a corporation of Delaware

Filed Oct. 24, 1967, Ser. No. 677,698
Int. Cl. C21d *1/62*
U.S. Cl. 148—18 18 Claims



Quenching process providing an aqueous wash solution to reduce dragout losses of an organic quenchant heavier

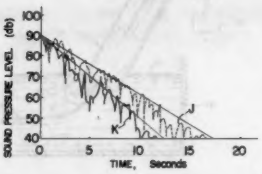
than water. The wash solution floats upon the surface of the organic quenchant but a partition allows part of the organic quenchant surface to remain exposed for quenching. If a water quench is desired to precede the organic quench, an aqueous phase is disposed above the organic phase adjacent the partition and thus isolated from the wash solution.

3,562,027

PIANO PLATE OF LOW LOSS FACTOR

Masayuki Takamura, Hironobu Hayashi, and Kinya Nozaki, Shizuoka-ken, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed Mar. 13, 1968, Ser. No. 712,652
Claims priority, application Japan, June 15, 1967, 42/38,361
Int. Cl. C22c *37/00;* G10c *3/06*
U.S. Cl. 148—35 5 Claims



A piano plate made of a cast ferrous metal having a loss factor (Q^{-1}) of from 1.5×10^{-3} to 0.2×10^{-3}, whereby the sound damping effect of a piano in which this plate is installed becomes extremely small, and the acoustical characteristics of the piano are greatly improved. At the same time, a great reduction in weight of the plate can be effected without sacrificing the mechanical strength and the improved acoustical characteristics. Suitable cast ferrous metals are cast steels, spheroidal graphite cast irons, malleable cast irons, and Meehanite cast irons.

3,562,028

TOUGH, HIGH STRENGTH STEEL ARTICLE

William E. Heitmann, Dolton, Ill., and Frank Garofalo, Munster, Ind., assignors to Inland Steel Company, Chicago, Ill., a corporation of Delaware

No Drawing. Filed Aug. 28, 1968, Ser. No. 755,769
Int. Cl. C22c *39/04, 39/30*
U.S. Cl. 148—36 7 Claims

Steel article, such as plate, having a relatively high yield strength, e.g. 70,000 p.s.i., together with a relatively high impact resistance, e.g. 15 foot-pound Charpy V-notch impact transition temperature in the range —50° to —100° F. or lower. Microstructure is ferrite plus pearlite. Ferritic grain size is 9.5 ASTM or finer. Composition, in wt. percent:

Carbon	0.02–0.26
Manganese	1.25–1.75
Silicon	0.75–1.5
Nitrogen	0.003–0.015
Aluminum	0.01–0.08
Vanadium	0–0.07
Columbium	0–0.03
Tungsten	0–0.1

Article is hot rolled with at least 25% deformation at finishing temperature above A_1 to give microstructure containing fine grained austenite (9.5 ASTM or finer). Cooling is rapid but controlled to avoid low temperature transformation products in microstructure. Normalizing optional.

3,562,029

PROCESSING OF FIBROUS MAGNESIUM SILICATE COATED SILICON STEEL

James J. Goglio, Leechburg, and Clarence L. Miller, Jr., Pittsburgh, Pa., assignors to Allegheny Ludlum Steel Corporation, Brackenridge, Pa., a corporation of Pennsylvania

No Drawing. Filed Apr. 18, 1968, Ser. No. 722,225
Int. Cl. C04b *35/58;* H01f *1/18*
U.S. Cl. 148—113 3 Claims

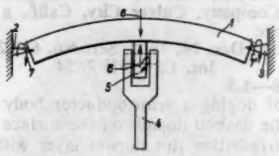
Described herein is an improvement in the processing of silicon steel where the steel is coated prior to heat treatment which involves the application of a coating of fibrous magnesium silicate instead of magnesia which has been used previously and which resulted in the in situ formation of crystalline magnesium silicate.

3,562,030

METHOD OF INDUCTIVELY SURFACE HARDENING ELONGATED STEEL WORKPIECES

Gerhard Seulen and Friedhelm Reinke, Remscheid, and Edgar Stengel, Wuppertal-Hahnerberg, Germany, assignors to AEG-Elotherm G.m.b.H., Remscheid-Hasten, Germany

Filed Oct. 20, 1967, Ser. No. 676,806
Claims priority, application Germany, Nov. 18, 1966, A 54,119
Int. Cl. C21d *1/10, 1/42*
U.S. Cl. 148—131 3 Claims



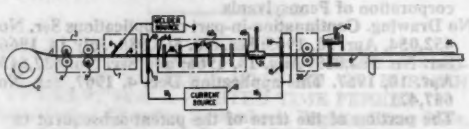
Elongated steel workpieces when inductively heated by rotation in heating position, tend to become distorted. This is avoided according to the invention by supporting said workpiece at a point approximately half-way along its length, and subjecting the said workpiece at this point to a biasing load to produce a deflection at the point of support during the process of heating, and hardening the said heated workpiece.

3,562,031

CONTINUOUS SMALL DIAMETER FERROUS TUBE MANUFACTURE

Glenn J. Gibson, 97 Beech Ave., Berkeley Heights, N.J. 07922

Filed Mar. 29, 1968, Ser. No. 717,273
Int. Cl. C21d *9/08*
U.S. Cl. 148—154 6 Claims



A process and apparatus for the production of annealed stainless steel tubing in one coninuous operation is disclosed. Resistance heating of the tube is employed through current applied by graphite brushes. A quenching step is achieved before the advancing tube contacts the second brush set. The quenching device, brush configuration and

stress-limiting advancement of the tube continuously without buckling or undue stretching are described. Apparatus for practising the process with bright annealing is disclosed which involves maintaining an envelope of inert gas around the resistance heating stage.

3,562,032

METHOD OF MANUFACTURING AN INTEGRATED SEMICONDUCTOR DEVICE

Jean-Claude Frouin and Michel de Brebisson, Caen, France, assignors, by mesne assignments, to U.S. Philips Corporation, New York, N.Y., a corporation of Delaware

Filed Feb. 5, 1968, Ser. No. 703,043
Claims priority, application France, Feb. 7, 1967, 93,984
Int. Cl. H01l 7/44, 7/64
U.S. Cl. 148—175 5 Claims

A method for making a monolithic integrated circuit is described. The circuit includes vertical complementary transistors in isolated islands. The emitter of the PNP transistor is diffused simultaneously with the isolation walls defining the islands. The base of the PNP transistor is formed by the island region adjacent the substrate, which acts as a collector. The NPN transistor is the usual double-diffused transistor.

3,562,033

METHOD OF DOPING SILICON WITH GROUP III SUBSTANCE

Juri Jansen, Vasteras, and Lennart Ryman, Grangesburg, Sweden, assignors to Allmänna Svenska Elektriska Aktiebolaget, Vasteras, Sweden, a corporation of Sweden

Filed Feb. 12, 1968, Ser. No. 704,928
Claims priority, application Sweden, Feb. 13, 1967, 1,949/67
Int. Cl. H01l 7/36, 7/44
U.S. Cl. 148—189 5 Claims

Method of diffusing a doping substance from group III of the periodic system into silicon discs for semi-conductor devices, in which the silicon discs are subjected both to the action of vapor from the doping substance and to the action of a halogen.

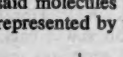
3,562,034

VULCANIZATION OF ALLYLIC HALIDE TERMINATED POLYMERS OF DIOLEFINIC HYDROCARBONS

Douglas C. Edwards, Sarnia, Ontario, Canada, assignor to Polymer Corporation, Sarnia, Ontario, Canada, a body corporate and politic

No Drawing. Filed Nov. 17, 1967, Ser. No. 683,818
Claims priority, application Canada, Nov. 28, 1966, 976,539
Int. Cl. C08d 3/14
U.S. Cl. 149—19 6 Claims

An aqueous emulsion polymerized undegraded olefinically unsaturated liquid polymer containing molecules of polymerized C_4–C_8 diolefinic hydrocarbons with a major proportion of said molecules having two separated allylic halide groups represented by the



structure is vulcanized with a substance selected from metals and metal compounds such as zinc, zinc oxide, zinc strearate, ferric chloride or bromide, mercuric acetate and stannic oxide.

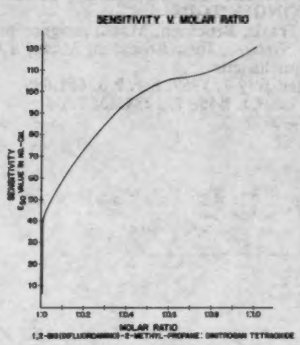
The vulcanization is carried out at a temperature of about 60–150° C. The product is suitable for use as a rocket fuel binder.

3,562,035

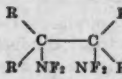
DESENSITIZATION OF DIFLUOROAMINO-SUBSTITUTED PROPELLANT COMPOUNDS USING DINITROGEN TETRAOXIDE

Barry D. Allan, Edgar F. Croomes, and Walter W. Wharton, Huntsville, Ala., assignors to the United States of America as represented by the Secretary of the Army

Filed Sept. 10, 1962, Ser. No. 222,738
Int. Cl. C06b 19/06
U.S. Cl. 149—74 3 Claims



1. The method of desensitizing to shock a difluoroamino-substituted compound of the formula



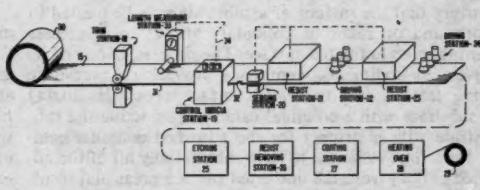
wherein R, R′, R″, and R‴ are each members selected from the group consisting of hydrogen and branched and straight chain lower alkyl groups of up to four carbon atoms, the total number of carbon atoms present in R, R′, R″, R‴ not to exceed six; said method comprising admixing with said compound dinitrogen tetraoxide in the molar ratio of difluoroamino-substituted compound to dinitrogen tetraoxide of 1.0:0.004 to 1.0:0.3.

3,562,036

CONTINUOUS METHOD OF MAKING INDEFINITE LENGTHS OF FLEXIBLE FLAT CONDUCTOR CABLE AND CIRCUITS

Lawrence R. Travis, Brockton, Mass., assignor to Electro Connective Systems, Inc., Brockton, Mass., a corporation of Massachusetts

Filed July 7, 1967, Ser. No. 651,846
Int. Cl. B44c 1/22; C23f 1/04
U.S. Cl. 156—3 5 Claims



Method of depositing resist on a continuously moving web of conductor metal foil backed by flexible dielectric material wherein a resist pattern is deposited on the foil at one station and a different resist pattern is deposited

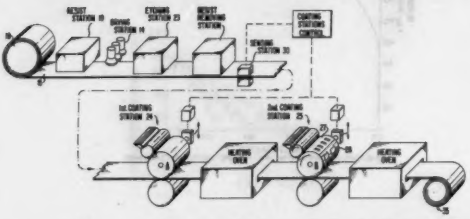
on the foil at another station, from which web an indefinite length of flat flexible cable and circuits is formed by etching the foil, the selection of resist deposition being controlled by sensing of previously formed control indicia in the form of openings, such as notches or holes, located along the web at a predetermined transverse position on the web.

3,562,037

CONTINUOUS METHOD OF PRODUCING INDEFINITE LENGTHS OF FLEXIBLE FLAT ELECTRICAL CONDUCTORS

Lawrence R. Travis, Brockton, Mass., assignor to Electro Connective Systems, Inc., Brockton, Mass., a corporation of Massachusetts

Filed July 7, 1967, Ser. No. 651,899
Int. Cl. B46c *1/22*; C23f *1/04*
U.S. Cl. 156—3 3 Claims



Method of continuously producing indefinite lengths of flexible flat multiple electrical conductors from a web wherein parts of the conductors are exposed for electrical connections, the method including the provision of a control band which is sensed to control the alignment of the web and to control the accurate coating of the conductors to provide a predetermined exposed conductor pattern.

3,562,038

METALLIZING A SUBSTRATE IN A SELECTIVE PATTERN UTILIZING A NOBLE METAL COLLOID CATALYTIC TO THE METAL TO BE DEPOSITED

Charles R. Shipley, Jr., Newton, and Michael Gulla, Framingham, Mass., assignors to Shipley Company, Inc., Newton, Mass., a corporation of Massachusetts

No Drawing. Filed May 15, 1968, Ser. No. 729,431
Int. Cl. B44d *1/18*; C23b *5/62*
U.S. Cl. 156—3 51 Claims

A process for the deposition of electroless metal on selected areas of a substrate using a colloidal catalyst solution of a metal catalytic to the electroless metal to sensitize the substrate. The catalyst is preferably a noble metal-stannic acid colloid and most preferably a palladium-stannic acid colloid. The process takes advantage of the discovery that the surface of a substrate may be treated to absorb and/or retain a colloidal catalyst to a greater extent than an untreated surface. The process, in one of its simplest embodiments, comprises providing a substrate having treated and untreated surface areas, sensitizing the substrate with a colloidal catalyst, contacting the substrate with a stripper for the adsorbed colloidal catalyst for a time sufficient to strip substantially all of the adsorbed colloid from the untreated surface areas and insufficient to strip the adsorbed colloid from the treated surfaces, and depositing electroless metal selectively over the treated areas of the substrate. The process is especially well adapted for the formation of printed circuit boards and is particularly useful for forming conductive through holes between surfaces of a printed circuit board.

3,562,039

METHOD OF IMPROVING THE SOLDERABILITY OF CONDUCTOR PLATES

Josef Strohmayer, Hans-Hermann Merkenschlager, and August Stumbaum, Munich, Germany, assignors to Siemens Aktiengesellschaft, a corporation of Germany

No Drawing. Filed Oct. 10, 1968, Ser. No. 776,298
Claims priority, application Germany, Oct. 11, 1967, P 16 21 516.0
Int. Cl. B23k *31/02*
U.S. Cl. 156—18 6 Claims

Through etching, preferably with etchable cupric ions, the solderability of electrical copper conductors can be considerably improved or restored.

3,562,040

METHOD OF UNIFORMALLY AND RAPIDLY ETCHING NICHROME

Gerald A. Garies, San Mateo, Calif., assignor to International Telephone and Telegraph Corporation, a corporation of Delaware

Filed May 3, 1967, Ser. No. 635,795
Int. Cl. C09k *3/00*; C23b *3/03*
U.S. Cl. 156—18 3 Claims

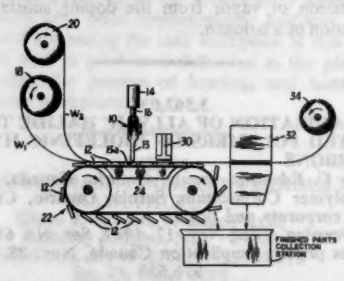
A process for fabricating a Nichrome thin film resistor as an integral part of a semiconductor integrated circuit. The Nichrome resistor is deposited on a layer of silicon dioxide grown or deposited on the semiconductor surface; aluminium contacts are deposited on the Nichrome resistance element and alloyed thereto.

3,562,041

METHOD AND APPARATUS FOR THE ULTRASONIC JOINING OF MATERIALS ACCORDING TO A PATTERN

Clifford A. Robertson, Bay Shore, N.Y., assignor to Cavitron Corporation, Long Island City, N.Y., a corporation of New York

Filed Oct. 26, 1967, Ser. No. 678,435
Int. Cl. B29c *27/08*; B32b *31/18*
U.S. Cl. 156—73 7 Claims

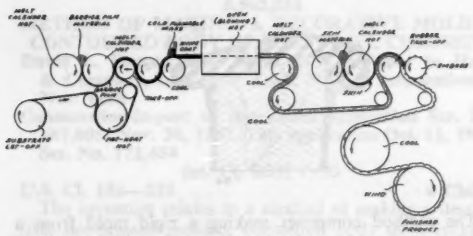


A method and apparatus for the ultrasonic joining of materials according to a pattern, at least one of which contains a thermoplastic. The elements to be joined are engaged between an ultrasonically vibrating member having an elongated working tip and a back-up or anvil means having a narrow raised surface corresponding to the desired pattern. The pattern is formed by moving the back-up or anvil means and the materials conjointly relative to the working tip so that the materials are joined in accordance with the pattern; as successive parts of the pattern surface traverse the working tip. The elongation of the working tip is in a direction angled to the direction of motion so as to minimize the area of contact at any instant of time between the working tip and the raised pattern surface.

3,562,042
JOINING MOLDINGS OF EXPANDED OLEFIN POLYMERS
Johann Zizlsperger, Frankenthal, Pfalz, and Hermann Tatzel, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
Filed Apr. 29, 1968, Ser. No. 724,757
Claims priority, application Germany, Apr. 28, 1967, P 17 04 473.4
Int. Cl. B32b *5/18*
U.S. Cl. 156—78 4 Claims

Articles having homogeneous foam structure are obtained by welding expanded olefin polymer moldings together at elevated temperature when the expanded olefin polymer still contains expanding agent when subjected to welding and the surfaces to be welded have temperatures which are 5° to 30° C. below the melting point of the olefin polymer.

3,562,043
LAMINATED STRUCTURE AND METHOD OF MAKING THE SAME
Robert G. Eddy, 20 Casablanca Court, Elnora, N.Y. 12065
Filed Sept. 12, 1967, Ser. No. 667,181
Int. Cl. B32b *5/18*
U.S. Cl. 156—79 13 Claims



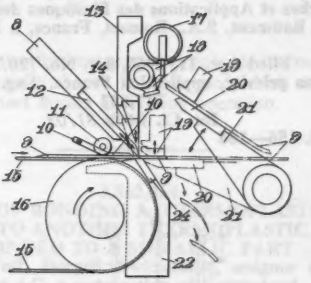
A laminated structure is formed by bonding to a carrier, for instance a textile sheet, a pre-formed, shape-retaining, intermediate layer or film; the carrier face being formed with projecting and recessed portions and the intermediate layer being bonded to the carrier in such a manner as to contact substantially only the projecting portions of the latter. On the free face of the intermediate layer is then formed a layer of hardenable material in flowable condition, which layer must be fusible to the intermediate layer and may contain a blowing agent. The hardenable layer is then hardened (and simultaneously fused to the intermediate layer and also simultaneously blown if a blowing agent is present). Thereby a laminated structure is formed substantially without filling the recessed portions of the carrier face, due to the interposition of the preformed intermediate film or the like.

3,562,044
APPARATUS AND METHOD FOR MANUFACTURE OF FABRIC-LIKE PILE PRODUCTS
George H. Erb, Cuttingsville, Vt., assignor to Velcro S.A., Nyon, Switzerland, a corporation of Switzerland
Filed Mar. 12, 1968, Ser. No. 716,265
Int. Cl. B32b *31/00*; C09j
U.S. Cl. 156—155 22 Claims

Method and apparatus for producing pile products useful in the same manner as conventional woven pile fabrics or, with further processing or conversion steps, useful as hook or loop elements of separable fasteners similar to the woven fasteners disclosed in U.S. Pats. 2,717,437 and 3,009,235 to De Mestral. Instead of weaving, pile strands are laid in parallel spaced relation with one another in a single plane, the strands are encapsulated in a matrix of low-melting-point metal alloy which is extruded with the strands as a thin flat sheet of ductile metal with the strands enclosed therein. The matrix is then

corrugated to shape and hold the enclosed strands in desired pile conformation, portions only of each strand are exposed by removing a part of the matrix, the exposed portions of the strands are then secured to a separately formed base sheet material and finally the remainder of the matrix is removed.

3,562,045
METHOD OF EDGEWISE SPLICING SHEETS OF VENEER
Katsuji Hasegawa, Nagoya, Japan, assignor to Kabushiki Kaisha Meinan Seisakusho, Nagoya, Japan
Filed Sept. 9, 1968, Ser. No. 758,556
Int. Cl. G03d *15/04*
U.S. Cl. 156—159 3 Claims

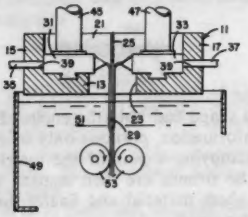


This invention relates to a method of edgewise splicing plural sheets of veneer in non-specified lengths obtained by rotatably peeling a log and clipping off the defective and unusable portions therefrom, wherein each veneer sheet is supported in a predetermined position in a first fixed horizontal plane and the front edge thereof is clipped off while the preceding veneer sheet, which has its rear edge already clipped off, is raised out of said horizontal plane to permit discharge of the clipped off front portion of the following sheet, and then the preceding sheet is returned to said horizontal plane; then both sheets are advanced until the rear edge of the succeeding sheet is in said predetermined position, and then the rear portion of said succeeding sheet is clipped off, and then this succeeding sheet is raised out of the horizontal plane to permit discharge of the clipped off rear portion of said succeeding sheet, and then the next succeeding sheet is advanced to bring the front edge thereof into position to be clipped off. After being clipped off, the rear edge of a preceding sheet is bonded to the front edge of the succeeding sheet.

3,562,046
METHOD AND APPARATUS FOR MAKING NET-LIKE STRUCTURES
Warren H. Guy, Glen Mills, Pa., assignor to FMC Corporation, Philadelphia, Pa., a corporation of Delaware
Filed Sept. 24, 1968, Ser. No. 762,116
Int. Cl. D04h *3/16*
U.S. Cl. 156—167 4 Claims

Method for making a net-like structure by combining extruded streams of strand-forming material in crossing

relationship, with the streams being connected to each other at only selected of their locations of crossing whereby the resulting structure includes mesh strands



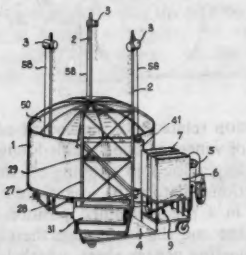
which are bonded to certain of the strands crossing therewith to form integral, unitary strand junctions and are unconnected to other of such strands at their points of crossing.

3,562,047

METHOD FOR FORMING CYLINDRICAL TANKS

Dominique Carlini, Rousset, France, assignor to Recherches et Applications des Plastiques dans l'Industrie et le Batiment, S.A., Rousset, France, a French company

Filed Apr. 11, 1968, Ser. No. 720,710
Claims priority, application France, Aug. 16, 1967, 117,983
Int. Cl. B65h *81/03*
U.S. Cl. 156—184 5 Claims



Cylinderical tanks and a method of and apparatus for forming such tanks from reinforced plastic material, the tanks being comprised of vertically stacked cylindrical sections. Each cylindrical section is formed of two thicknesses of resin impregnated fabric which have been successively wound over a mandrel, the thicknesses being vertically displaced to permit overlapping at the joints between sections. As each section is completed, the mandrel is reduced in diameter and the section is raised vertically.

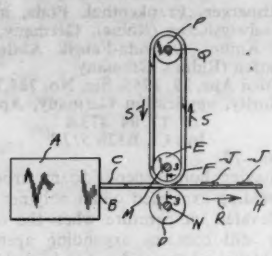
3,562,048

METHOD OF MAKING AN EMBOSSED LAMINATE

Theodore Loew, Schenectady, N.Y., assignor, by mesne assignments, to The Standard Products Company, a corporation of Ohio

Filed Nov. 15, 1967, Ser. No. 683,389
Int. Cl. B31f *7/00*
U.S. Cl. 156—209 6 Claims

The disclosure relates to a method of embossing or impressing designs upon an extruded thermoplastic strip, according to which the strip is passed between a bottom pressure roller and a top roller carrying a decorating belt.



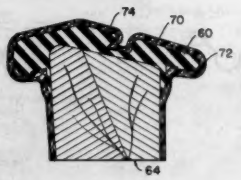
The belt has means thereon to cause embossments or impressions on the extruded polymer.

3,562,049

METHOD OF MAKING A MOLD

Richard G. Maher, Detroit, Mich., assignor to Maher Pattern Company, Warren, Mich., a corporation

Filed Oct. 26, 1967, Ser. No. 678,404
Int. Cl. B29c *17/00*
U.S. Cl. 156—213 12 Claims



The method comprises making a rigid mold from a rigid pattern, without, in the course of making the rigid mold, destroying the rigid pattern. In the method, the rigid pattern is first formed of a material such as wood. It is desired that the final mold have a cavity with a textured surface to simulate a material such as grained leather. Consequently, a sheet of plastic material having the desired textured surface on one face thereof is formed around the pattern by use of heat and allowed to set to form the desired textured surface exteriorly of the pattern. A flexible mold of a material such as rubber is then formed around the pattern. The pattern is removed from the flexible mold without damage to either the pattern or the mold. A second pattern of flexible material such as rubber is then formed in the first mold. The flexible pattern and flexible mold may be separated without destroying either. Finally, a desired rigid mold is formed around the flexible pattern by laminating alternate layers of resin and glass fibre thereon. The flexible pattern is removable from the rigid mold whereupon the rigid mold is ready for use in casting.

3,562,050

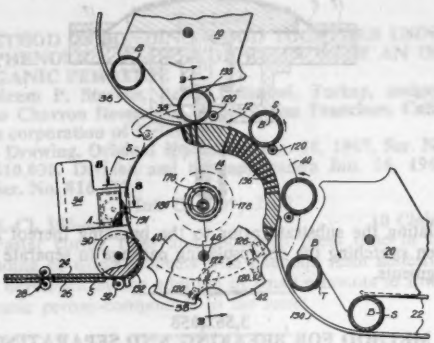
METHOD OF APPLYING A STRIP MEMBER TO A CYLINDRICAL CONTAINER BODY

Walter Thomas Hake, Wyckoff, N.J., and Henry Gilbert Stieglitz, Cary, Ill., assignors to American Can Company, New York, N.Y., a corporation of New Jersey

Filed Oct. 23, 1967, Ser. No. 677,413
Int. Cl. B29c *17/04*
U.S. Cl. 156—215 5 Claims

In applying to container bodies plastic seam release strips which are adapted to be stripped from the sealed container to provide an easy-opening feature, a rotating

container body and a strip member are moved along substantially concentric, parallel paths to a location where the leading end of the strip member is brought



into substantial tangential contact with the rotating body, whereupon the strip member is transferred to and wrapped around the rotating container body.

3,562,051

METHOD OF MAKING A DECORATIVE MOLDED CONTOURED BODY OF POLYVINYL CHLORIDE

David L. Strauss, Fair Lawn, N.J., assignor to Harte & Company, Inc., New York, N.Y., a corporation of New York

Continuation-in-part of abandoned application Ser. No. 687,005, Nov. 30, 1967. This application Oct. 11, 1968, Ser. No. 772,454

Int. Cl. B31f *7/00*

U.S. Cl. 156—219 **6 Claims**

The invention relates to a method of making a decorative, hot-pressed molded, contoured body of poly(vinyl chloride) in mat-like form, by means of a series of sequential steps in which a mass of highly plasticized poly(vinyl chloride) is shaped in a cavity mold, cooled, and thereafter while the shaped mass is still retained in one-half of the cavity mold a printed film of poly(vinyl chloride) is applied to the exposed surface so that the printed surface of the film is ultimately visible as the decorative element of the molded form. In this regard, the printed surface of the film may be applied as the exposed wear surface of the article, or a "reverse" printed film may be applied with the printed surface pressed into the main body of the article, or the printed surface of the poly (vinyl chloride) film may be pressed into the backing surface of the article opposite the wear surface, in the event that the main body of the article is transparent, unfilled, poly(vinyl chloride), so that the printed surface of the film is also visible through the main body of the article.

3,562,052

INTERIOR LINING MATERIALS FOR MOTOR VEHICLE BODIES

Franz Matejcek, Furth, Hubert Scheithauer, Baunach, and Hermann Peter Kayser, Bamberg, Germany, assignors to Schaeffler Teppichboden, G.m.b.H., Bamberg, Germany, a corporation of Germany

No Drawing. Filed May 16, 1967, Ser. No. 638,748

Claims priority, application Germany, May 23, 1966, M 69,591

Int. Cl. B31f *7/00;* **B32f** *5/06*

U.S. Cl. 156—221 **4 Claims**

Novel custom-made interior linings for motor vehicle bodies comprised of a needle stitched fiber fleece of 50 to 600 gm./m.^{2} having a permanently shaped, thermoplastic supporting layer.

ERRATUM

For Class 156—242 see:
Patent No. 3,562,001

3,562,053

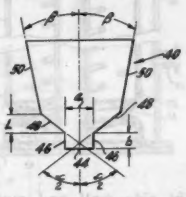
APPARATUS AND METHOD FOR HEAT SEALING HEAT SHRINKABLE FILM

Donald C. Lindley, Tulsa, Okla., assignor to Poly-Version, Inc., Tulsa, Okla.

Filed June 19, 1967, Ser. No. 646,893

Int. Cl. B32b *31/18*

U.S. Cl. 156—251 **7 Claims**



An apparatus for heat sealing shrinkable thermo-plastic films. A specially shaped knife is used which maintains thermal contact during a severing operation.

3,562,054

METHOD OF BONDING A THERMOPLASTIC MATERIAL TO ANOTHER THERMOPLASTIC MATERIAL, BONDED TO A METALLIC PART

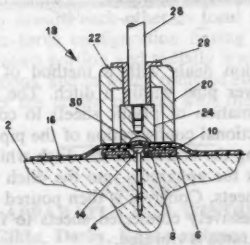
Emanuel Wolf, Horgen, Switzerland, assignor to Ironflex AG, a corporation of Switzerland

Filed Sept. 5, 1967, Ser. No. 665,393

Claims priority, application Switzerland, Sept. 7, 1966, 12,961/66; Sept. 26, 1966, 13,865/66

Int. Cl. B29c *19/06*

U.S. Cl. 156—275 **4 Claims**



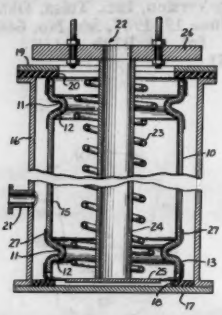
Method and device for attaching a thermoplastic foil at a supporting structure wherein the foil is heat sealed or welded to a holding plate formed by a metallic core and a thermoplastic cover layer. The holding plate is rigidly connected to the supporting structure and subsequently the foil is placed over the holding plate. Welding heat is generated by creating a high frequency field between the metallic core of the holding plate and an electrode placed on the side of the foil facing away from the holding plate. The metallic core of the holding plate forms a counter electrode.

3,562,055

METHOD OF CONSTRUCTING LIQUID-TIGHT SIDE WALL CONTAINERS

Willem Koudstaal, Spijkenisse, Netherlands, assignor to Inland Steel Company, Chicago, Ill., a corporation of Delaware

Filed Sept. 11, 1967, Ser. No. 666,830
Claims priority, application Great Britain, Sept. 13, 1966, 40,790/66
Int. Cl. B29c *17/06*
U.S. Cl. 156—287 **9 Claims**



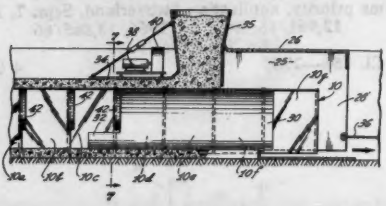
A liquid-tight side wall and method of construction are described in which an inner plastic liner is adhered to the interior of an air-permeable container side wall by the use of vacuum forming and a heat-activatable adhesive.

3,562,056

METHOD OF PRODUCING A SEWER PIPE

William C. Olson, West Sacramento, Calif., assignor to Thunder Enterprises, Inc., West Sacramento, Calif., a corporation of California

Original application Jan. 27, 1966, Ser. No. 523,418, now Patent No. 3,470,918, dated Oct. 7, 1969. Divided and this application Apr. 25, 1969, Ser. No. 840,885
Int. Cl. B28b *1/08;* E04b *1/16*
U.S. Cl. 156—293 **9 Claims**



This invention deals with a method of continuously forming a sewer pipe within a ditch. The method comprises the formation of plastic sheets to conform to the inner cross-sectional configuration of the pipe, moving the apparatus along the bottom of the ditch while feeding the sheets through the apparatus into the ditch and interconnecting said sheets. Concrete is then poured into the ditch onto the successively connected sheets to form the pipe while the apparatus is vibrated.

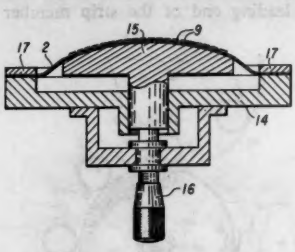
3,562,057

METHOD FOR SEPARATING SUBSTRATES

Kenneth Wayne McAlister, Tempe, and Warren Rice, Scottsdale, Ariz., assignors to Texas Instruments Incorporated, Dallas, Tex., a corporation of Delaware

Filed May 16, 1967, Ser. No. 638,903
Int. Cl. B01j *17/00;* H01l *5/00;* H01r *39/00*
U.S. Cl. 156—300 **10 Claims**

Disclosed is a method for breaking a substrate into segments along scribed lines while maintaining the original orientation of the segments and for separating the segments so that each segment may be individually removed without disturbing any other segment by encapsulating the substrate prior to the breaking thereof and then stretching the encapsulating package to separate the segments.

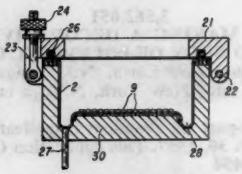


3,562,058

METHOD FOR BREAKING AND SEPARATING SUBSTRATE MATERIAL

Bobby Gene Boyd, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex., a corporation of Delaware

Filed May 16, 1967, Ser. No. 638,910
Int. Cl. B01j *17/00;* H01l *5/00;* H01r *39/00*
U.S. Cl. 156—300 **10 Claims**



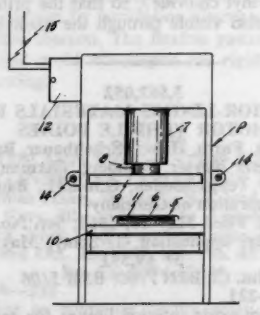
Disclosed is a method for maintaining the original orientation of the segments of a broken substrate of material by vacuum packaging the substrate before breaking it into segments and then removing a portion of the vacuum package prior to vacuum forming the remaining portion of the package to cause the segments to be separated.

3,562,059

DECORATION OF POLYETHYLENE AND POLYURETHANE FOAM

Carl F. Gladen, 3667 Kawkawlin River Drive, Bay City, Mich. 48706

Continuation-in-part of application Ser. No. 326,865, Nov. 29, 1963. This application Aug. 21, 1967, Ser. No. 668,985
Int. Cl. B32b *5/20, 31/12*
U.S. Cl. 156—323 **3 Claims**



A method of decorating plastic foam wherein a printed face of a film strip is placed against the foam, a strip

of woven cloth is applied over the film strip, heat and pressure are applied to the face of the cloth, and the cloth is then stripped.

3,562,060

METHOD OF BONDING WOOD TOGETHER USING PHENOLIC - ALDEHYDE RESIN WITH AN ORGANIC PEROXIDE

Malcom P. Stevens, Bebek, Istanbul, Turkey, assignor to Chevron Research Company, San Francisco, Calif., a corporation of Delaware

No Drawing. Original application Jan. 18, 1967, Ser. No. 610,036. Divided and this application Jan. 16, 1969, Ser. No. 816,432

Int. Cl. C09j *3/00*

U.S. Cl. 156—335 **10 Claims**

Faster curing rates and shortened press time in the bonding of wood products with phenolic resin adhesives are developed by the addition of small amounts of lower organic peroxy-compounds to the resin.

3,562,061

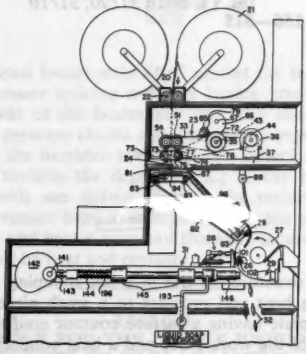
METAL WOOL PAD MAKING APPARATUS

William F. Maidment, Burpham, Guilford, England, assignor to Colgate-Palmolive Company, New York, N.Y., a corporation of Delaware

Filed May 17, 1966, Ser. No. 550,856

Int. Cl. B05c *7/04;* **B23p** *17/06;* **B26f** *3/02*

U.S. Cl. 156—357 **19 Claims**



Apparatus for continually making soap or detergent impregnated metal wool pads from a continuous web of said metal wool comprising means for positively feeding the web, means for periodically severing strips of predetermined length from the leading end of said web by rupturing the web under tension, means for forming said strips into rolls, cooperating punch and die means operable to confine a rolled strip between them and compress the roll into a pad, means for transferring said rolls from the roll forming means to said punch and die means in predetermined spaced succession, and means for injecting fluid soap or detergent into the compressed pad confined by the punch and die means.

3,562,062

TIRE BUILDING DRUM HAVING A RADIALLY MOVABLE INTERMEDIATE ASSEMBLY

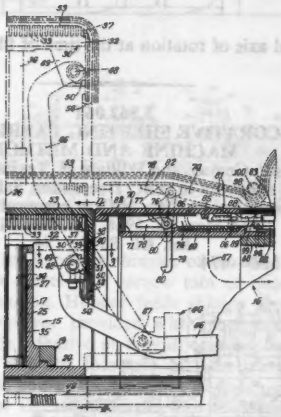
Emerson C. Bryant, South Bend, Ind., assignor to National-Standard Company, Niles, Mich., a corporation of Delaware

Filed June 3, 1969, Ser. No. 829,915

Int. Cl. B29h *17/26*

U.S. Cl. 156—401 **10 Claims**

A tire building machine having an annular intermediate assembly defined by a plurality of circumferentially arranged intermediate sections each having a plurality of interleaved first supporting members movable radially and circumferentially relative to each other to form substantially cylindrical supporting surfaces of different predetermined radii, and a plurality of second supporting members adjacent the axially outermost of the first supporting members having outer curved edges, and blade means adjacent the second supporting members to provide end supporting cylinderical surface portions of radii substantially the same as the radius of a first predetermined cylindrical surface of the first supporting members, and which blade means together with the outer curved edges of the second supporting members define curved shoulders extending radially inwardly from the outer edges of a second predetermined cylindrical surface of the first supporting members.



Method of building pneumatic tires in which tire carcass material is supported in the form of a tubular cylinder, disposing tire beads inwardly of the ends of the tubular cylinder for encasement by displacing the outer end portions of the tubular cylinder axially inwardly around the tire beads, and radially displacing the intermediate portion of the tubular cylinder while moving the encased tire beads axially toward each other to form the tire carcass material into torus configuration having a substantially cylindrical crown portion and radially inwardly extending sidewall portions, and in which rounded end shoulder portions connect the crown portion with the side wall portions.

3,562,063

APPARATUS FOR WINDING

Roland P. Gibbs, Derby, Kans., assignor to Rock Island Oil & Refining Co., Inc., Wichita, Kans., a corporation of Kansas

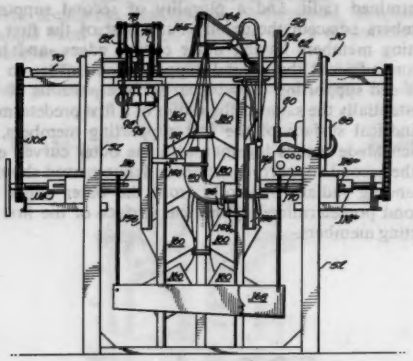
Filed Feb. 2, 1968, Ser. No. 702,740

Int. Cl. B31c *1/00, 1/08, 13/00*

U.S. Cl. 156—431 **20 Claims**

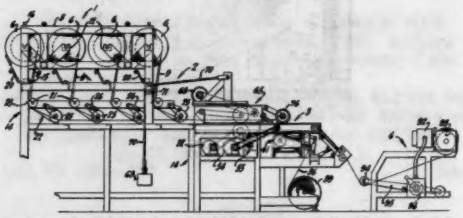
A form for a curved pipe is mounted at opposed ends on anchor plates slidably mounted on rotating actuating arms. The anchors are simultaneously adjustable in the vertical plane whereby the form may rock in the vertical plane while rotating. A means for applying a wrap to the curved form then progressively applies a wrap of filamentous reinforcements along the entire curved length of

the form. The rotating form is controlled whereby the filament-receiving portion of the form is rotated about a



horizontal axis of rotation at the time of filament application.

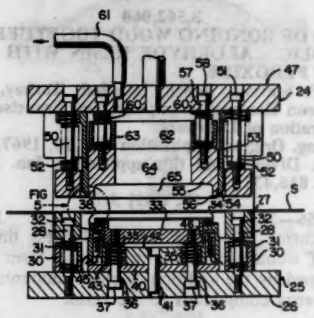
3,562,064
DECORATIVE SHEETING FABRICATING MACHINE AND METHOD
Lee F. Rost, Covina, and William H. Taylor, West Covina, Calif., assignors to ABC Decoration Sales and Leasing Company, Forest City, N.C., a corporation
Filed Mar. 25, 1968, Ser. No. 715,677
Int. Cl. B31f *1/34*
U.S. Cl. 156—474 **16 Claims**



An apparatus and method for forming decorative sheeting which include means for bringing two independent sources of thin, flexible material to a single point for continuously forming such sheeting. The process of forming such sheeting includes the use of two separate bonding materials, one of which is quick acting but forms only a temporary bond and the other of which is slow acting, but forms a permanent bond between the materials from the two separate sources. The apparatus and process also reduces the size of the material from one source to approximate the size of the material from the other source and also ruffling or producing a random appearance of the material from said one source when it is mated with and bonded to the material from said other source.

3,562,065
APPARATUS FOR MAKING WINDOW CAN CLOSURES
James F. Fox, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y., a corporation of New York
Original application Sept. 23, 1966, Ser. No. 581,561, now Patent No. 3,472,417, dated Oct. 14, 1969. Divided and this application Feb. 26, 1969, Ser. No. 802,355
Int. Cl. B32b *31/00;* **B65d** *25/34*
U.S. Cl. 156—499 **9 Claims**

This disclosure relates to an apparatus for forming a composite can end of the type including an outer ring and a sheet of thermoplastic material stretched across and joined to the ring. The apparatus simultaneously tensions the thermoplastic material and conforms it to the cross sec-

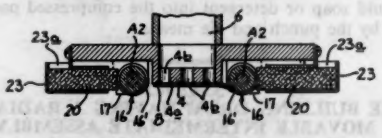


tion of the ring and heat seals the thermoplastic material to the ring.

3,562,066
DIE STRUCTURE FOR HOT STAMPING MACHINE
Lloyd G. St. Denny, Camillus, N.Y., assignor to General Electric Company, a corporation of New York
Filed Apr. 28, 1967, Ser. No. 634,744
Int. Cl. B32b *31/20, 31/10*
U.S. Cl. 156—515 **5 Claims**

A die structure for use in a hot stamping machine for providing heat and pressure to a work piece comprising a metal plate having a surface contour conforming to the contour of the work piece and a heat conducting resilient material molded in and contained within a depression in the plate.

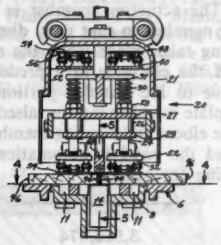
3,562,067
LABEL CENTERING APPARATUS
Leo Kucheck, Chicago, Ill., assignor, by mesne assignments, to Compac Corporation, Newark, N.J., a corporation of Delaware
Filed July 16, 1968, Ser. No. 745,330
Int. Cl. B65h *17/22, 9/16*
U.S. Cl. 156—542 **11 Claims**



Label centering apparatus usable with a label applying machine having a label receiving surface thereon, the label centering apparatus including roller means mounted for rotation on opposite sides of the label receiving surface about axes of rotation which are in a plane which is flush with or located inwardly of said label receiving surface so the confronting roller surfaces converge toward

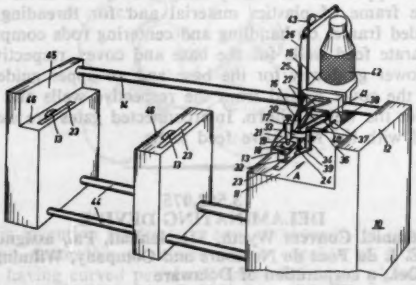
and up to the same, the closest portions of the confronting roller surfaces at the point where they are flush with the label receiving surface being equally spaced from a label centering axis on said label receiving surface and spaced apart a distance equal to the corresponding dimension of the labels to be delivered thereto. The roller means are rotated in opposite directions so they approach the label receiving surface from a position outwardly thereof.

3,562,068
EDGE VENEER APPLICATOR
William H. Schottel, Belleville, Ill.
(2121 Walton Road, St. Louis, Mo. 63114)
Filed Mar. 26, 1968, Ser. No. 716,221
Int. Cl. B32b *31/10, 31/20*
U.S. Cl. 156—544 9 Claims



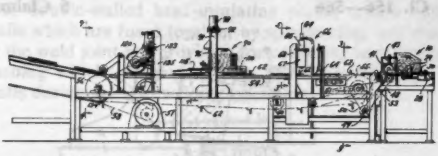
A T-shaped heater strip fitted against the upper heater bar of a veneer splicing machine having pressure chains on each side of the heater bar and feed chains located below the pressure chains and exposed through the work surface of the machine table. Toed-in rollers urge a pair of panels towards the depending leg of the heater strip as the panels are drawn through the machine by the chains. A veneer band is interposed between the edge of each panel and heater strip and these are securely bonded to the panels by heat and pressure.

3,562,069
MACHINE FOR THE DIRECT JOINING OF VENEERS OR SIMILAR MATERIAL
Gerhard Ortel, 10 Torfweg, Rietberg, Westphalia, Germany
Filed Feb. 19, 1968, Ser. No. 706,382
Claims priority, application Germany, Feb. 27, 1967, K 61,540
Int. Cl. B32b *31/04*
U.S. Cl. 156—546 17 Claims



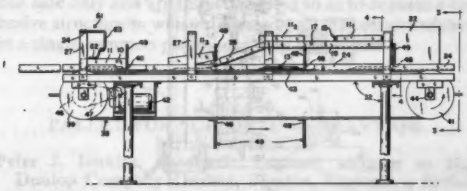
The invention provides a machine for joining graincd thin sheet material, particularly individual veneers or sheets of veneers edgewise along the run of grain. For this purpose cross ties in the form of threads are adhesively affixed to the sheet material crosswise of the joints and grain. Furthermore, feed means are provided for continuously feeding the veneers on a worktable crosswise of the joints and grain underneath supply means for running a preheated thread coated with an adhesive under pressure onto the surface of the feeding veneers. Braking means are arranged to retard the forward feed of the veneers and close open joints and splits in the grain while the threads are being applied and the adhesive sets.

3,562,070
SHINGLE HANDLING APPARATUS
Albert A. Adams, Malvern, and James E. Giegerich, Norristown, Pa., assignors to Certain-Teed Products Corporation, Ardmore, Pa., a corporation of Maryland
Filed Mar. 25, 1968, Ser. No. 715,774
Int. Cl. B27m *3/02;* B32b *31/20*
U.S. Cl. 156—560 17 Claims



Apparatus for handling shingles of the kind consisting of rectangular sheets with narrow tabs of random width superposed thereon. Hopper feeds shingle sheets one at a time to conveyor provided with mechanism for applying flowable adhesive at laterally spaced locations on each shingle with the locations of adhesive application for one shingle being different from locations of adhesive application for the next shingle. Tab dispensing mechanism is provided for the purpose of placing tabs of random width on only those locations at which adhesive is applied. Pressing means for pressing tabs against the adhesive locations and bundling means are also provided.

3,562,071
APPARATUS FOR AUTOMATICALLY ATTACHING A CARTON TO A DISPLAY CARD
Winston G. Rockefeller, Woodcliff Lake, N.J., assignor to Colgate-Palmolive Company, New York, N.Y., a corporation of Delaware
Filed May 3, 1968, Ser. No. 726,432
Int. Cl. B65c *9/02;* B65g *57/11*
U.S. Cl. 156—566 12 Claims



Cartons, such as rectangular toothpaste cartons, are automatically located and secured accurately in position upon display cards. The cartons and cards are laterally fed into separate slide guides in the apparatus at different levels, with the carton at the higher level, and associated cards and cartons are advanced longitudinally together in lateral registry along the guides in correct relative location for assembly, by moving conveyor finger means. One

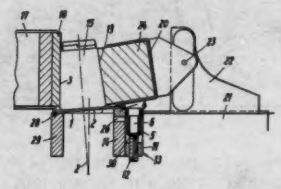
side of the carton and one side of the card engage sides of the guides that lie in a common vertical plane. The upper surface of each card is adhesive coated as it moves along the lower guide. The upper guide descends to deposit each moving carton in turn upon the upper adhesive coated surface of the moving card beneath it, and then as the assembly moves along the lower guide a spring presses the carton firmly against the card to insure a good bond in the moving assembly.

3,562,072

DEVICE FOR LABELING CONICAL AND CYLINDRICAL OBJECTS, ESPECIALLY CONTAINERS, PREFERABLY BOTTLES

Teo Stellamanns and Werner Emmerling, Berlin, Germany, assignors to Johann Weiss Maschinenfabrik und Apparatebau GmbH, Berlin, Germany, a corporation of Germany

Filed Dec. 10, 1968, Ser. No. 782,670
Claims priority, application Germany, Dec. 22, 1967, P 15 86 407.0
Int. Cl. B32b *31/04*; B65c *9/04*
U.S. Cl. 156—566 **6 Claims**



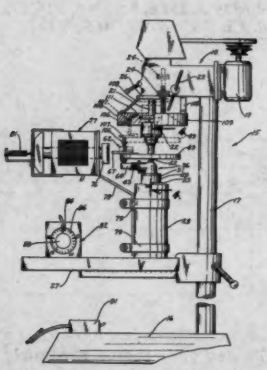
A labeling device having a plane pressing surface which is tiltable into a plane passing through the generatrix of the circumferential surface of the object to be labeled.

3,562,073

APPARATUS FOR FRICTION WELDING A PAIR OF PLASTIC MEMBERS IN A PREDETERMINED ANGULAR RELATION

Willis L. Kibler, Detroit, Mich., assignor, by mesne assignments, to McCord Corporation, Detroit, Mich., a corporation of Maine

Filed Jan. 8, 1968, Ser. No. 696,447
Int. Cl. B29c *27/08*; B23k *1/06*
U.S. Cl. 156—580 **5 Claims**



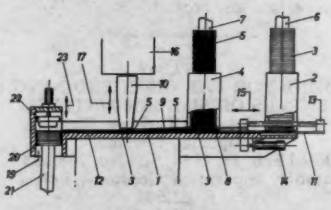
The spin welding machine includes a supporting table disposed below an axially movable and rotatable clutch mechanism that includes an annular plate member for pivotally supporting an elbow engaging pawl and a trip lever therefor. A spring pressed centering member rotatably carried on the plate support projects axially downwardly from the plate support. A plastic housing member having an annular portion for connection with one end of a plastic elbow fitting is held against rotation in a table mounted fixture with the annular portion faced upwardly in coaxial alignment with the plate support. With one end of the fitting received in the annular portion the other fitting end is extended radially of the annular portion. On downward movement of the support plate to a limited position the centering member engages the fitting to maintain a pressure contact of the fitting with the housing annular portion. On lowering of the plate member to an adjusted position for rotation the pawl releasably engages the radially extended end of the fitting and rotates the fitting relative to the housing annular portion. This rotation is continued for a predetermined time period that is terminated with the engagement of the pawl trip lever by a solenoid operated actuating member carried on the table. The actuating member is oriented relative to the housing member so that pawl disengagement from the elbow fitting takes place when the radially extended end portion of the elbow is in a predetermined rotated position relative to the annular portion of the housing member. The plate member is then raised, the spin welded assembly of the elbow and housing member removed from the fixture, and the pawl is automatically reset for the next spin welding operation.

3,562,074

APPARATUS FOR JOINING AND SUBSEQUENTLY STACKING THE PARTS OF A SLIDE FRAME

Peter Mundt, Garmisch-Partenkirchen, Otfried Urban, Kochel am See, and Arnold Neuhold, Garmisch-Partenkirchen, Germany, assignors to GEIMUPLAST Peter Mundt KG.

Filed Apr. 22, 1968, Ser. No. 723,070
Claims priority, application Germany, Apr. 28, 1967, P 15 72 658.6
Int. Cl. B29c *27/08*; B32b *31/20*
U.S. Cl. 156—580 **3 Claims**



An apparatus for weld-joining a base and cover of a slide frame of plastics material and for threading the welded frames on handling and centering rods comprises separate feed wells for the base and cover, respectively. A lower guideway for the base and an upper guideway for the cover extend from the respective wells and join under the welding horn. Interconnected gates are associated with the respective feed wells.

3,562,075

DELAMINATING DEVICE

Nathaniel Convers Wyeth, Mendenhall, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del., a corporation of Delaware

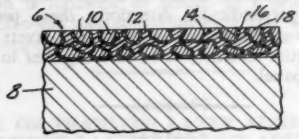
Filed Jan. 15, 1968, Ser. No. 697,903
Int. Cl. B32b
U.S. Cl. 156—584 **6 Claims**

In a device for delaminating a multilayered element having a strippable stratum and a plastic film outer

stratum, a surface gripping member characterized in that its surface has a plurality of spaced protrusions of small surface area which can be forced into the surface of the

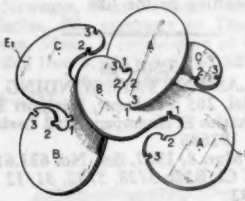
element. The gripping member may be in a tool (plier type) on a roller or on a belt of a continuous type delamination machine.

3,562,076
FLOORING WITH DECORATIVE FILLER
Charles R. Lea, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn., a corporation of Delaware
Filed Mar. 3, 1967, Ser. No. 620,325
Int. Cl. B32b *19/02;* **B44f** *9/04;* **F04f** *15/17*
U.S. Cl. 161—5 **7 Claims**



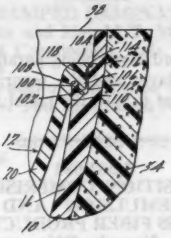
Organic polymeric flooring, preferably formed from a transparent epoxy, polyurethane, or polyester polymer containing as a decorative filler granules formed from a translucent base rock having an insoluble pigmented ceramic coating which after wear of the coating from the tops of the granules remains color stable.

3,562,077
COMPONENT FOR USE IN MAKING DECORATIVE STRUCTURES
Raoul Raba, 67 Rue Croulebarbe, Paris, France
Filed Oct. 25, 1967, Ser. No. 677,903
Claims priority, application France, Oct. 26, 1966, 81,584
Int. Cl. A47g *35/00*
U.S. Cl. 161—14 **11 Claims**



This invention relates to a new component for use in making decorative structures which consists of a thin sheet having curved peripheral edges defining a plurality of lobes symmetrically positioned about a central point. The edges of the lobes are so notched that a plurality of individual sheets can be hooked together to form a decorative structure.

3,562,078
DOUBLE WALLED PLASTIC ARTICLES AND METHOD OF MAKING SAME
Fred R. Zumstein, Detroit, Mich., assignor to King-Seeley Thermos Co., Ann Arbor, Mich., a corporation of Delaware
Filed Jan. 23, 1969, Ser. No. 793,302
Int. Cl. B23b *1/04;* **B29** *27/08*
U.S. Cl. 161—44 **11 Claims**



A double-walled heat insulating plastic article having walls which are fused together by spin welding and wherein the weld joint has provision for collecting and confining flashing which comes from the bearing surfaces of the walls during the spin welding operation.

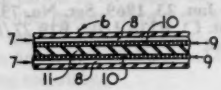
3,562,079
COILED-FILAMENT NON-WOVEN FABRICS
Robert N. Steel, South Bend, Ind., assignor to Uniroyal, Inc., New York, N.Y., a corporation of New Jersey
Filed Oct. 27, 1967, Ser. No. 678,751
Int. Cl. D04h *3/07, 13/00*
U.S. Cl. 161—47 **26 Claims**

An elastic non-woven fabric with high multidirectional stretchability, having transversely intersecting warps and fillings composed of resilient highly extensible coil strands of mono-filamentary nature. The fabric is made by forming a first single layer structure of parallel coil strands, forming a second single layer structure of parallel coil strands which overlie and cross the strands of the first layer, and compacting the two coil layers into one another so that the coil strands of each group are entangled with the crossing coil strands of the other group from one side only and are interconnected so as to become a cohesive structure in which the axes of all the coil strands are in a single common plane.

3,562,080
PALLET FOR SUPPORTING HEAVY OR BULKY OBJECTS
Peter J. Jenkins, Sandbach, England, assignor to The Dunlop Company Limited, London, England, a British company
Filed Nov. 13, 1967, Ser. No. 682,030
Claims priority, application Great Britain, Nov. 22, 1966, 52,204/66
Int. Cl. B32b *5/12*
U.S. Cl. 161—57 **1 Claim**

A pallet for supporting heavy or bulky objects such as packing cases during transit for example from place to place in warehouses, in the form of a flexible rubber or

plastic material having embedded therein two separate cord layers each of individually flexible high modulus parallel cords, and a textile reinforcement or cord rubber or plastic layer sandwiched between the cord layers,



the cords of one cord layer being parallel with the cords of the other cord layer and the separation of the cord layers being sufficient to give the pallet a degree of transverse rigidity.

3,562,081

BINDER COMPOSITION COMPRISING AN AQUEOUS EPOXY EMULSION AND PROCESS OF MAKING GLASS FIBER PRODUCTS

Joseph P. Stalego, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, a corporation of Delaware

No Drawing. Filed Feb. 15, 1968, Ser. No. 705,617
Int. Cl. B23b *5/28;* **C08g** *30/04*
U.S. Cl. 161—93 **8 Claims**

Glass fiber mats and laminated glass fiber products made from glass fiber mats wherein the glass fibers are bonded together at their points of contact with a binder composition applied as an aqueous emulsion composed of, as essential ingredients, an epoxy resin, an esterifying acid, a curing agent, a silane bonding aid and a solvent for the epoxy resin; and having a pH from about 7 to 8.5.

3,562,082

FLEXIBLE HIGH-STRETCH LAMINATE WITH SURFACE SKINS AND COILED-FILAMENT NON-WOVEN FABRIC SPACER

Edward C. van Buskirk, South Bend, Ind., assignor to Uniroyal, Inc., New York, N.Y., a corporation of New Jersey

Filed Oct. 27, 1967, Ser. No. 678,676
Int. Cl. D04h *3/07, 13/00*
U.S. Cl. 161—47 **32 Claims**

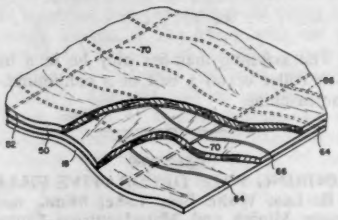
A flexible laminate designed for use in the form of internally open high-stretch sheet materials having high compression resistance. The laminate is composed of two surface layers or skins secured to an intermediate elastic non-woven spacer fabric having high multi-directional stretchability provided by transversely intersecting warps and fillings of resilient highly extensible coil strands of mono-filamentary nature. The spacer fabric is made by forming a first coil strand single layer structure, forming a second coil strand single layer structure so that the coil strand reaches of the latter overlie and cross the coil strand reaches of the first layer on one side of the latter only, and compacting the two coil strand layers into one another so that the coil strand reaches of each layer are entangled with the crossing coil strand reaches of the other layer from one side only and are interconnected so as to become a cohesive structure in which the axes of all the coil strand reaches are in a single common plane. The surface layers or skins may be either permeable or impermeable sheet materials.

3,562,083

PRESTRESSED CORRUGATED PANEL AND METHOD OF MAKING SAME

Fred E. Schroder, 130 Capers St., Greenville, S.C. 29605

Filed Feb. 9, 1968, Ser. No. 704,405
Int. Cl. B32b *3/28, 5/12*
U.S. Cl. 161—56 **16 Claims**



A plurality of layers of plywood ar provided with the grain of adjacent layers being substantially perpendicular to one another. The overall structure is corrugated. A plurality of prestressed members are provided extending in mutually perpendicular directions, these prestressed members being sandwiched between the layers of plywood. The entire assembly is bonded together to provide a prestressed panel.

3,562,084

LIGHT WEIGHT BODIES OF COTTON FIBER REINFORCED HYDROUS ALKALINE EARTH METAL SILICATE THERMAL INSULATION MATERIAL

Richard F. Shannon, Lancaster, Ohio, assignor to Owens Corning Fiberglas Corporation, a corporation of Delaware

Filed May 17, 1967, Ser. No. 639,070
Int. Cl. B32b *5/16*
U.S. Cl. 161—89 **13 Claims**

A synthetically prepared body of molded high temperature thermal insulation material composed essentially of a matrix of chemically combined alkaline earth metal silicate interspersed with cotton fibers tenaciously anchored into the matrix and providing reinforcement and increased structural strength and integrity to the insulation material. The cotton fibers are interspersed in the matrix of the insulation material in the form of individual or wound groupings of filaments, strands or rovings or the like and/or in the form of an open network fabric of interlocked or interwoven cotton fibers such as cotton mesh or cotton netting or the like.

3,562,085

FILAMENT TAPE WINDING

Edwin L. Crandal, 205 Via Jucar, Newport Beach, Calif. 92660, and Charles E. Kaempen, 3202 Larkstone Drive, Tustin, Calif. 92680

Filed Mar. 8, 1967, Ser. No. 621,614
Int. Cl. B32b *5/28, 5/32, 31/12*
U.S. Cl. 161—93 **4 Claims**

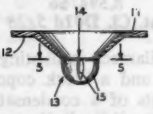
A method for the fabrication of laminated plastic structures using tape winding techniques. A composite tape material is utilized in the present winding process comprising an intermediate layer of resin impregnated reinforcing material imposed between two layers of a substrate material. The method of the present invention comprises the steps of imposing a continuous strip of resin impregnated reinforcing material between two continuous strips of substrate material thereby forming a composite tape; winding the composite tape around a

mandrel until the surface of the mandrel is covered, then curing the composite tape. In the preferred embodiment of the invention, the substrate material is polystyrene foam and reinforcing material is fiberglass impregnated with a curable polyurethane elastomer.

3,562,086
NONSLIP CARPET RUNNER

Abraham I. Kantor, Bloomfield, N.J. (6 Fredon Drive, Box Section No. 185, Livingston, N.J. 07039)

Filed Jan. 15, 1968, Ser. No. 697,973
Int. Cl. A47l 23/22; D06n 7/00
U.S. Cl. 161—125 1 Claim



A nonslip carpet runner comprising a sheet of flexible thermoplastic material with a large number of nipple-like hollow projections along its under surface. Each projection is rigidified by means of a plurality of embossed channels and complementary ribs extending vertically along the projection.

3,562,087
DECAL OR TRANSFER LAYER ADHERED TO A CARRIER LAYER WITHOUT ADHESIVE

John Percy Wigzell, Bulawayo, Rhodesia, assignor to Vactran Patents (Private) Limited, Bulawayo, Rhodesia, a corporation of Rhodesia

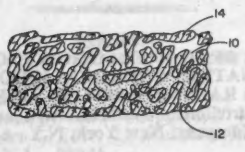
No Drawing. Filed Dec. 7, 1965, Ser. No. 512,215
Claims priority, application Rhodesia, Dec. 17, 1964, 469/64
Int. Cl. B32p 3/00
U.S. Cl. 161—127 7 Claims

Transfers comprising indicia supported on a carrier sheet are prepared from non-porous components which are adhered together without the use of any adhesive. The layers are held together by means of differences between the external or ambient air pressure and the pressure of air between the layers. The transfer layer is thus adapted to be readily removable from the carrier layer by perforating or otherwise rupturing one of the layers to admit air between the layers.

3,562,088
PRESSURE SENSITIVE ADHESIVE TAPE

Nicholas S. Newman, West Newton, Mass., and Donatas Satas, Palatine, Ill., assignors to The Kendall Company, Boston, Mass., a corporation of Massachusetts

Filed Dec. 8, 1967, Ser. No. 689,010
Int. Cl. C09j 7/04
U.S. Cl. 161—151 5 Claims

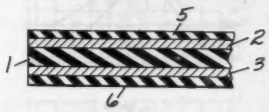


A thermosettable but temporarily thermoplastic acrylic film is cast upon a layer of thermoplastic film such as polypropylene. A layer of unspun and unbonded textile-length fibers is superimposed upon the acrylic film, and the multi-ply assembly is subjected to heat and pressure sufficient to cause the films to flow around and encapsulate at least 80% of the fibers, which remain in discontinuous phase. Unlike ordinary laminates, such products are characterized by a single inflection point in the stress-strain curve, and are suitable for bases for adhesive tapes.

3,562,089
DAMPED LAMINATE

Glenn E. Warnaka and Harold T. Miller, Erie, Pa., assignors to Lord Corporation, Erie, Pa., a corporation of Pennsylvania

Continuation-in-part of application Ser. No. 362,823, Apr. 27, 1964. This application Nov. 1, 1967, Ser. No. 683,086
Int. Cl. B32b 7/02
U.S. Cl. 161—166 11 Claims

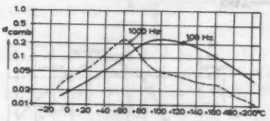


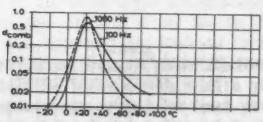
The magnitude and frequency range of damping provided by a constrained layer damping structure are improved by the addition of an extensional damping layer. If the shear damping layer of the constrained layer structure and extensional damping layer provide peak damping at different temperatures, effective damping will also be provided over a wider temperature range than with the shear or extensional damping layers alone.

3,562,090
VIBRATION DAMPED SANDWICH SYSTEMS

Hermann Oberst and Joachim Ebigt, Hofheim, Taunus, Günther Duve, Frankfurt am Main, and Alfred Schommer, Bad Soden, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany, a corporation of Germany

Filed Nov. 18, 1968, Ser. No. 776,678
Claims priority, application Germany, Dec. 5, 1967, P 17 00 122.8
Int. Cl. E06b 3/92, 9/26
U.S. Cl. 161—166 5 Claims





A vibration damped sandwich system comprising two hard plates and interposed between the plates a vibration damping interlayer comprising a graft polymer of styrene

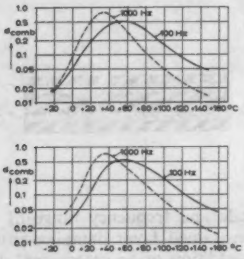
or optionally a mixture of styrene with a copolymerizable carboxylic acid, for example acrylic and/or methacrylic acid, on copolymers of 10 to 30% by weight of vinyl acetate and 90 to 70% by weight of ethylene.

3,562,091

VIBRATION DAMPED SANDWICH SYSTEMS

Hermann Oberst and Joachim Ebigt, Hofheim, Taunus, Günther Duve, Frankfurt am Main, and Alfred Schommer, Bad Soden, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Maine, Germany, a corporation of Germany

Filed Nov. 18, 1968, Ser. No. 776,690
Claims priority, application Germany, Dec. 6, 1967, P 16 94 224.8
Int. Cl. E06b *3/92, 9/26;* **C08f** *15/40*
U.S. Cl. 161—166 **4 Claims**



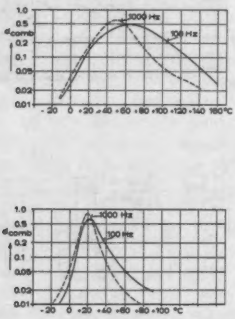
A vibration damped sandwich system comprising two hard plates and interposed between the plates a vibration damping interlayer comprising graft polymers of styrene or optionally styrene with small amounts of a copolymerizable carboxylic acid, especially acrylic acid and/or methacrylic acid, on a copolymer of 30 to 40% by weight of vinyl acetate, 30–40% by weight of 2-ethylhexyl acrylate, 30 to 10% by weight of dibutyl maleate and 5 to 15% by weight of crotonic acid.

3,562,092

VIBRATION DAMPED SANDWICH SYSTEMS

Hermann Oberst and Joachim Ebigt, Hofheim, Taunus, Gunther Duve, Frankfurt am Main, and Alfred Schommer, Bad Soden, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany, a corporation of Germany

Filed Nov. 18, 1968, Ser. No. 776,691
Claims priority, application Germany, Dec. 6, 1967, P 16 94 227.1
Int. Cl. C08f *15/40;* **E06b** *3/92, 9/26*
U.S. Cl. 161—166 **4 Claims**



A vibration damped sandwich system comprising two hard plates and interposed between the plates a vibration damping interlayer comprising graft polymers of styrene or optionally styrene with small amounts of a copolymerizable carboxylic acid, especially acrylic and/or methacrylic acid, on a copolymer of 30 to 40% by weight of vinyl acetate, 30–40% by weight of n-butyl acrylate, 30 to 10% by weight of dibutyl maleate and about 10% by weight of crotonic acid.

3,562,093

BICOMPONENT FILAMENTS

James Dennis Griffiths, Coventry, and Colin David May, Kenilworth, England, assignors to Courtaulds Limited, London, England, a British company

No Drawing. Filed Feb. 28, 1967, Ser. No. 619,149
Claims priority, application Great Britain, Feb. 28, 1966, 8,594/66
Int. Cl. D01d *5/28*
U.S. Cl. 161—173 **5 Claims**

A bicomponent filament consisting of a crystalline polymer component and a block copolymer component consisting of segments of a condensation homopolymer and a random condensation copolymer.

3,562,094

LAMINATE OF ELASTOMER AND POLYETHYLENE TEREPHTHALATE ALSO METHOD OF MAKING SAME

Chester T. Chmiel, Newfoundland, N.J., assignor to Uniroyal, Inc., a corporation of New Jersey

No Drawing. Filed Sept. 27, 1965, Ser. No. 490,637
Int. Cl. B32b *27/36, 27/06*
U.S. Cl. 161—231 **9 Claims**

Diolefin polymer elastomers are firmly bonded to poly (ethylene terephthalate) by treating the latter with a negatively substituted acetic acid at a temperature at or in the vicinity of the glass transition temperature of the polyester and then contacting the treated polyester with a diolefin polymer elastomer stock containing reagents capable of reacting to produce resorcinol-formaldehyde type resins.

3,562,095

SANDWICH STRUCTURE COMPRISING THERMOSETTING UNSATURATED POLYESTER CORE AND FACE SHEETS OF CHLORINE CONTAINING THERMOPLASTIC POLYMER

Forrest J. Rahl, Dusan C. Prevorsek, and Hendrikus J. Oswald, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y., a corporation of New York

No Drawing. Filed Mar. 21, 1967, Ser. No. 624,710
Int. Cl. B32b *27/08*
U.S. Cl. 161—233 **10 Claims**

A method for providing improved bonding in a sandwich structure which has (1) a thermosetting unsaturated polyester resinous core and (2) thermoplastic face sheets selected from the group consisting of polyvinyl chloride, chlorinated polyvinyl chloride and chlorinated polyethylene, the latter incorporating between about 0.1% and about 20% of a compound having one or more unsaturated >C=C< groups.

3,562,096

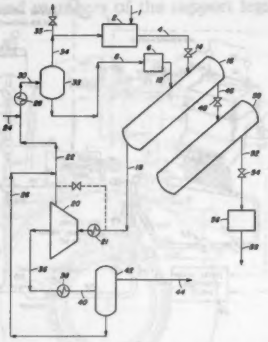
RECOVERY OF SOAP FRACTION FROM RECYCLE IMPREGNATING COOKING LIQUOR IN A CONTINUOUS RAPID PULPING SYSTEM

John F. Tourtellotte, Westfield, N.J., assignor to The Lummus Company, New York, N.Y., a corporation of Delaware

Filed Apr. 21, 1967, Ser. No. 632,578
Int. Cl. D21c *11/00*
U.S. Cl. 162—16 **3 Claims**

A process for the delignification of cellulosic material wherein a portion of impregnation liquor is withdrawn

from an impregnation zone, centrifuged to separate the withdrawn liquor into a soap lean fraction and a soap rich fraction, and the soap lean fraction is recycled to



the impregnation zone. Tall oil, in the amount of from 10 to 20 gallons per ton of pulp, is obtained from the impregnation liquor.

3,562,097

MULTI-PLY CYLINDER PAPER OF REDUCED MACHINE-TO-CROSS DIRECTION TENSILE STRENGTH RATIO

Romulus S. von Hazmburg, Laguna Hills, Calif., assignor to United States Gypsum Company, Chicago, Ill., a corporation of Delaware

Filed Jan. 30, 1967, Ser. No. 612,351
Int. Cl. D21f *11/08*
U.S. Cl. 162—129 **4 Claims**

An uncreped, multi-ply cylinder machine paper sheet and process of making it having a ratio of machine-to-cross direction dry tensile strength between about 3.35:1 and 4.1:1, said sheet containing 7–20% mineral-fibers with no more than 43% mineral fibers in any one ply.

3,562,098

PROCESS FOR OBTAINING MULTICOLORED EFFECT ON PAPER

Maurice Jacques Plumez, Wheeling, Chester Burton Brown, Chicago, and William Stuart Karro, Franklin, Ill., assignors to Geigy Chemical Corporation, Ardsley, N.Y., a corporation of New York

No Drawing. Filed Jan. 16, 1969, Ser. No. 791,798
Int. Cl. D21h *5/02*
U.S. Cl. 162—134 **1 Claim**

Multicolored effects are obtained on paper by adding a water insoluble, organic solvent soluble, colorant, such as Solvent Violet 11 or Solvent Red 36, to the pulp prior to the formation of the sheet of paper, forming the paper sheet and then coating or spraying the paper sheet with an organic solvent, such as ethyl alcohol or benzyl alcohol, to dissolve a portion or all of the colorant; alternatively the colorant may be dispersed in an aqueous system and applied to the paper sheet, the sheet dried and then coated or sprayed with said organic solvent.

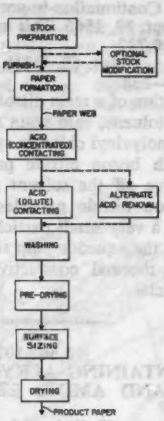
3,562,099

ERASABLE PAPER AND PROCESS FOR MAKING SAME

William R. Wasko, 201 Cleveland Ave., Cherry Hill, N.J. 08034; and Milton R. Sheppard, 27 Bermuda Circle, and Robert J. Eber, 21 Mullshire Lane, both of Willingboro, N.J. 08046

Filed Jan. 17, 1968, Ser. No. 698,473
Int. Cl. D21h *3/08, 3/20, 3/28*
U.S. Cl. 162—135 **8 Claims**

Process for making erasable paper by forming a paper web, contacting the formed web with a parachmentized solution, removing excess acid, at least partially drying the web, and applying to a surface of the paper one or more sizing agents which are fluorinated carboxylic acids,



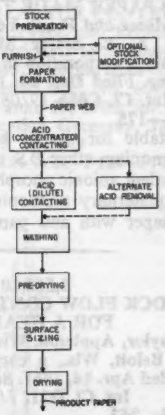
and are preferably perfluorinated carboxylic acids, and are applied alone or in combination with certain additives. The invention also includes the product of the foregoing process.

3,562,100

ERASABLE PAPER AND PROCESS FOR MAKING SAME

William R. Wasko, 201 Cleveland Ave., Cherry Hill, N.J. 08034, and Milton R. Sheppard, 27 Bermuda Circle, Willingboro, N.J. 08046
Continuation-in-part of application Ser. No. 416,791, Dec. 8, 1964. This application Jan. 17, 1968, Ser. No. 698,485

Int. Cl. D21h *3/12*
U.S. Cl. 162—135 **8 Claims**



Process for making erasable paper by forming a paper web, contacting the formed web with a parchmentized solution, removing excess acid, at least partially drying the web, and applying to a surface of the paper one or more sizing agents which are alkanolamine salts of fluorine-substituted aliphatic phosphates, and are applied alone or in combination with certain additives. The invention also includes the product of the foregoing process.

3,562,101
BORON NITRIDE FILLED PAPER

Joseph W. Tereshko, Berea, Ohio, assignor to Union Carbide Corporation, New York, N.Y., a corporation of New York

No Drawing. Continuation-in-part of application Ser. No. 583,093, Sept. 29, 1966. This application Feb. 19, 1969, Ser. No. 800,722

Int. Cl. D21h *3/00*

U.S. Cl. 162—138 5 Claims

A thin solution of a resin dissolved in a suitable solvent, for example toluene, said resin selected from the group consisting of polyvinyl chloride epoxy and phenolic resins, is mixed with boron nitride particles. The mixture is heated to drive off the solvent and cure the resin. The resultant boron nitride particles coated with resin are pulverized to a very small particle size, mixed with water and added to the aqueous pulp slurry to produce a paper of enhanced thermal conductivity containing moisture resistant particles.

3,562,102
PAPER CONTAINING ALKYL GLYCIDYL MIXED ESTERS AND AMINE REACTION PRODUCTS THEREOF

Van R. Gaertner, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo., a corporation of Delaware

No Drawing. Original application Dec. 17, 1965, Ser. No. 514,709, now Patent No. 3,459,715. Divided and this application Oct. 31, 1968, Ser. No. 772,401

Int. Cl. D21h *3/44*

U.S. Cl. 162—168 10 Claims

Mixed alkyl glycidyl esters of polycarboxylic acid or anhydride-containing adducts of olefinically unsaturated natural oils and of polycarboxylic acid or anhydride-containing copolymers with alpha-olefin compounds, and amine reaction products thereof, which are useful in the preparation of sized cellulosic paper substrates and in the preparation of cured films and solid resinous potting compositions.

3,562,103
PROCESS OF MAKING PAPER CONTAINING QUATERNARY AMMONIUM STARCH ETHERS CONTAINING ANIONIC COVALENT PHOSPHORUS AND PAPER MADE THEREFROM

Kenneth B. Moser and Frank Verbanac, Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill., a corporation of Delaware

No Drawing. Filed Dec. 28, 1967, Ser. No. 694,078

Int. Cl. C08b *19/06;* D21h *3/28*

U.S. Cl. 162—175 9 Claims

Starch suitable for use as beater additive having a quaternary amonium ether D.S. of 0.005 to 1.5 and about 0.01 to 1 covalent anionic phosphate or ether phosphonate groups per quaternary ammonium ether group, process of making paper with and paper made therefrom.

3,562,104
STOCK FLOW CONTROL SYSTEM FOR A HEADBOX

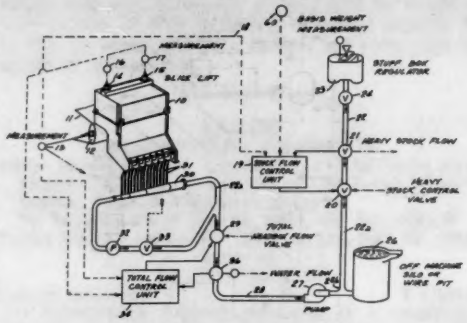
James W. Taylor, Appleton, Wis., assignor to Beloit Corporation, Beloit, Wis., a corporation of Wisconsin

Filed Apr. 14, 1967, Ser. No. 631,028

Int. Cl. D21f *1/06, 1/08*

U.S. Cl. 162—253 8 Claims

A control system for a headbox controlling the variables effecting the formation, weight and other characteristics of a paper web formed. In the preferred embodiment there is a continuously moving forming wire which receives stock passing through a slice in the headbox. The system includes a sensing device for generating a first control signal indicative of the speed of the forming wire, a transducer device for generating a second control signal indicative of the open area of the slice, and a sensing device for generating a third control signal indicative of the stock flow from a stock supply chest. The three control signals are supplied to a stock flow control unit and a total flow control unit, which control the flow of



stock from the slice such that the ratio of stock velocity to forming wire speed may be maintained constant or varied at will.

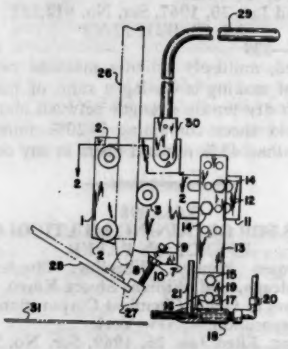
3,562,105
SLICE JET MEASURING APPARATUS

David B. R. Hill, Covington, Va., assignor to Westvaco Corporation, a corporation of Delaware

Filed May 8, 1968, Ser. No. 727,428

Int. Cl. D21f *7/06*

U.S. Cl. 162—263 6 Claims



Apparatus for positioning, in the slice jet of a paper machine headbox, a tube for either measuring the velocity of the slice jet or permitting samples of the papermaking stock to be removed from the slice jet.

3,562,106
APPARATUS FOR MAINTAINING THE SLICE OPENING IN A PAPERMAKING HEADBOX

Ralph A. Beck, Thomas G. McKie, and Donal J. Wolf, Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis., a corporation of Wisconsin

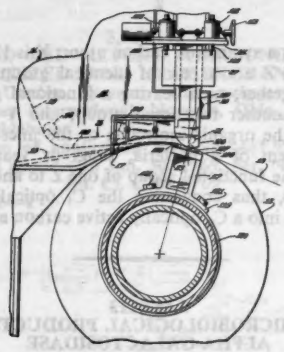
Continuation of application Ser. No. 601,987, Dec. 15, 1966. This application Feb. 2, 1970, Ser. No. 7,355

Int. Cl. D21f *1/02*

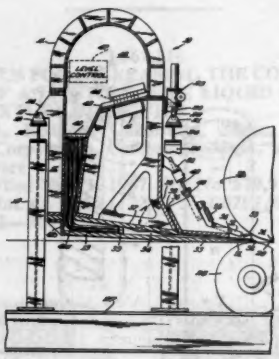
U.S. Cl. 162—317 7 Claims

Adjustable support for slice lip for pressure head box for papermaking machine in which the slice lip has a tip extending across the breast roll and Fourdrinier wire on the roll. A beam is supported on stationary supports independently of the head box to extend across the breast roll in vertically spaced relation with respect to the breast roll and for vertical adjustment relative to the breast roll. Suspension links suspend the slice lip from the beam. The support for the beam comprises adjustable support legs

to which the beam is connected, the support legs having at the bottom ends arcuate shaped end members which are supported by and rockable on bearing blocks which are in turn supported by secured block supports. The arcuate shaped end members of the support legs are supported on the bearing blocks coincident with the point of intersection of extended radial lines extending from the axis of rotation of the breast roll through the tip of the slice lip. The position of the slice lip may thus be adjusted with respect to the periphery of the breast roll along this radial line to maintain the tip of the slice lip in the same fixed relation with respect to the breast roll, regardless of upward deflection of the slice lip by the upward forces of the stock of the lip.

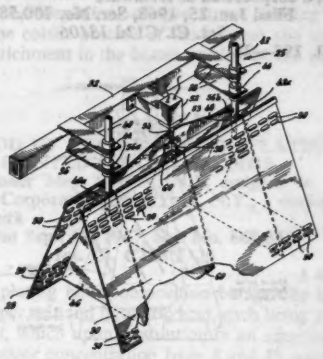


3,562,107
TUBE BANK HEADBOX
John F. Schmaeng, Rockton, Ill., assignor to Beloit Corporation, Beloit, Wis., a corporation of Wisconsin
Filed Aug. 29, 1967, Ser. No. 664,153
Int. Cl. D21f *1/02*
U.S. Cl. 162—336 **1 Claim**



A headbox construction for a papermaking machine wherein the headbox forms a housing having a receiving chamber and an exit chamber and a plurality of tubes or pipes connected between the chambers to direct stock flow to the exit chamber whereupon the stock is delivered to a forming surface. The tubes have one end thereof secured to a perforated plate which, in turn, forms at least a wall portion of the receiving chamber, and the other end of the tubes is secured to a second perforated plate, which in turn, forms at least a wall portion of the exit chamber. Also, the tubes, hereinafter referred to as a tube bank, are bent in such a manner as to change the directional flow of the stock.

3,562,108
VIBRATORY DEFLOCCULATOR FOR PAPERMAKING APPARATUS
Kasimir Lopas, 118 Skyview Drive, Stamford, Conn. 06902
Filed Jan. 22, 1968, Ser. No. 699,551
Int. Cl. D21f *1/06*
U.S. Cl. 162—341 **9 Claims**



A vibratory deflocculator for breaking up agglomerates of fibers in a paper stock suspension, and which eliminates stapling. The deflocculator is suspended in the stock in, for example, the headbox of the papermaking apparatus; it consists of a pair of perforated plates spaced apart by baffles and disposed in planes which intersect at an angle to the perpendicular. The plates are suspended from a support bar by springs and are vibrated transverse to the direction of stock flow to rapidly pump stock in alternate directions through the perforations.

3,562,109
HYDRAULIC FALL-BRAKE OR SHOCK ABSORBER FOR NUCLEAR REACTOR CONTROL RODS
Helmut Bezold, Hohenschwarz, and Eckhard Steinkamp, Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany, a corporation of Germany
Continuation of application Ser. No. 609,061, Jan. 13, 1967. This application June 10, 1968, Ser. No. 751,638
Claims priority, application Germany, Jan. 14, 1966, S 101,449
Int. Cl. G21c *7/20*; F16f *9/14*
U.S. Cl. 176—36 **7 Claims**

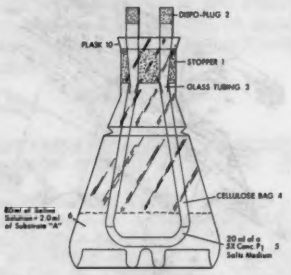
Hydraulic shock absorber for a control rod in a nuclear reactor is formed of a vertically extending guide tube for guidingly receiving a falling control rod. The

guide tube is cylindrical substantially along the entire length thereof and has longitudinally spaced cylindrical constrictions at the lower end thereof. Openings are provided in the guide tube above the constrictions ot permit reactor coolant fluid to pass therethrough.

3,562,110
PRODUCTION OF AMINO ACIDS

John D. Douros, Jr., Littleton, Colo., Lars A. Naslund, Morganville, N.J., and William J. Lahl, Marysville, Ohio, assignors to Esso Research and Engineering Company, a corporation of Delaware

Filed Jan. 25, 1968, Ser. No. 700,580
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 **5 Claims**



Aerobic fermentation process for the production of extracellular amino acids which uses, as a primary source of carbon, a C_1–C_{30} n-aliphatic hydrocarbon feed with an aqueous, inorganic salt growth medium, and a microorganism capable of growth on said n-aliphatic hydrocarbon feed, said process being conducted in the presence of cellulose. It is preferred that the n-aliphatic hydrocarbon be the sole source of carbon in the process, preferred n-aliphatic hydrocarbon feed being comprised primarily of C_{11}–C_{30} n-paraffins.

3,562,111
PROCESS FOR PRODUCING 2-THIOURIDYLIC ACID

Kiyoshi Nakayama, Sagamihara-shi, and Haruo Tanaka, Machida-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan, a corporation of Japan

No Drawing. Filed Sept. 9, 1968, Ser. No. 758,571
Claims priority, application Japan, Sept. 21, 1967, 42/60,159
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 **10 Claims**

A process for producing 2-thiouridylic acid by fermentation which comprises culturing a 2-thiouridylic acid-producing microorganism belonging to the genus Brevibacterium, Corynebacterium, Arthrobacter or Micrococcus under aerobic conditions in an aqueous nutrient medium. Either 2-thiouracil or 2-thiouridine is added to the medium as a precursor.

3,562,112
PRODUCTION OF OPTICALLY ACTIVE ANTIPODES

Heinz Gibian, Klaus Kieslich, Hans-Joachim Koch, Horst Kosmol, Clemens Rufer, Eberhard Schröder, and Rosemarie Vössing, Berlin, Germany, assignors to Schering A.G., Berlin, Germany

No Drawing. Filed Sept. 13, 1966, Ser. No. 578,996
Claims priority, application Germany, Sept. 14, 1965, Sch 37,715
Int. Cl. C07c *167/00;* **C12d** *13/00, 13/06*
U.S. Cl. 195—51 **28 Claims**

A process for the production of optically active compounds, such as intermediates for the production of steroid hormones, which comprises subjecting an optically inactive compound of the formula:

wherein C_1 is a symmetric carbon atom; X is H or lower-alkyl; Z and Z are a pair of identical groups, separate or joined together, each bearing a functional group convertible to another functional group; and Y is the remainder of the organic molecule; to the microbiological enzyme system of a bacteria, fungi or yeast, thereby converting the functional group of one Z to another functional group, thus converting the C_1 optically inactive carbon atom into a C_a optically active carbon atom.

3,562,113
RAPID MICROBIOLOGICAL PRODUCTION OF ALPHA-GALACTOSIDASE

Sin'Itiro Kawamura, Takamatsu, Kagawa-ken, and Tadasi Kasai and Sumizo Tanusi, Mikicho, Kagawa-ken, Japan, assignors to the United States of America as represented by the Secretary of Agriculture

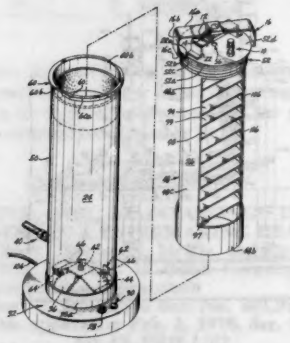
No Drawing. Filed June 17, 1968, Ser. No. 737,343
Int. Cl. C07g *7/028*
U.S. Cl. 195—66 **1 Claim**

Purified extracts of sonicated 4–8 hour cultures of *Escherichia coli,* subsp. *communior,* ATCC 7009; provide very high yields of α-galactosidase that hydrolyzes raffinose and other α-galactosides.

3,562,114
APPARATUS FOR INCUBATION CULTURES

Richard M. Steidl, 444 Yosemite N., Minneapolis, Minn. 55422, and Robert H. Steidl, 17030 15th NW., Seattle, Wash. 98177

Filed Jan. 5, 1970, Ser. No. 716
Int. Cl. G12b *1/00*
U.S. Cl. 195—139 **3 Claims**



This invention comprises an incubator having an inner core assembly having horizontally extending shelves for supporting culture plates in separated stacked relationship to provide air flow and temperature transfer to the center of plates from all surfaces, and wherein the vertical column of shelves of the inner core assembly is supported within a surrounding and also cylinder-like outer canister

assembly thus providing for piston-like action and trapping of the warm canister atmosphere within the canister when the incubator is being moved into an open position for accessing of an individual plate.

3,562,115

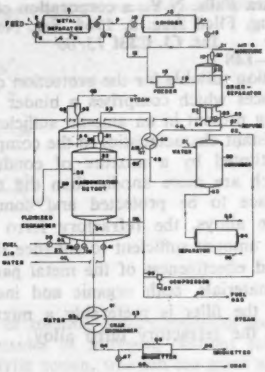
FLUIDIZED BED RETORT SURROUNDED BY A FLUIDIZED SAND HEAT EXCHANGER

Donald D. Dunlop, Norman, Okla., assignor to Creative Enterprises International, Norman, Okla., a corporation of Oklahoma

Continuation of application Ser. No. 461,916, June 7, 1965. This application Jan. 30, 1969, Ser. No. 800,806

Int. Cl. C10b *3/02*

U.S. Cl. 201—1 **13 Claims**



This invention relates to a method for the conversion of organic material to carbon with the evolution of a combustible gas in a fluidized bed surrounded by a fluidized heat exchanger.

3,562,116

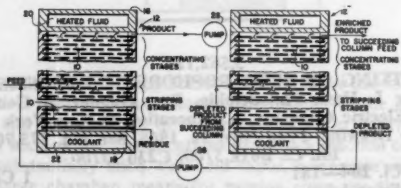
APPARATUS FOR INCREASING THE CONCENTRATION OF A LESS VOLATILE LIQUID FRACTION IN A MIXTURE OF LIQUIDS

Franklin A. Rodgers, Cambridge, Mass., assignor to Pactide Corporation, Cambridge, Mass., a corporation of Delaware

Filed Nov. 1, 1967, Ser. No. 679,916

Int. Cl. B01d *1/22, 1/26;* **C02l** *1/06*

U.S. Cl. 202—200 **11 Claims**



Apparatus for increasing the concentration of a less volatile liquid fraction in a mixture of the liquid and a more volatile liquid, and particularly for the concentration of heavy water in a mixture including ordinary water. The apparatus comprises a multiplicity of microporous membranes substantially impermeable to the liquids of the mixture and permeable to the vapors of the liquids, sandwiched together to form a column between means located at the ends of the column for creating a temperature gradient across the column. The mixture is introduced into a medial section of the column and circulated toward the hotter end thereof as thin films between adjacent membranes to cause flow of the less volatile (higher boiling point) fraction toward the hotter end of the column and flow of the more volatile (lower boiling point) fraction toward the colder end resulting in stripping or depletion of the lower boiling point fraction in the colder portion of the column and concentration or enrichment in the hotter portion of the column.

3,562,117

METHOD OF COPPER ELECTROPLATING PRINTED CIRCUIT BOARDS

John E. Vander Mey, Stirling, N.J., assignor to Allied Chemical Corporation, New York, N.Y., a corporation of New York

Filed Sept. 18, 1967, Ser. No. 668,551

Int. Cl. C23b *5/20*

U.S. Cl. 204—24 **5 Claims**

A copper plating bath composition comprising a mixture of a copper salt and fluoboric acid, each being present in an amount, which upon dissolution in an aqueous bath provides a copper concentration from 5 and 35 grams per liter and from 100 to 700 grams per liter of fluoboric acid. The plating baths of the present invention have particular efficacy in the copper plating of recessed areas, such as perforated substrates for use as printed circuit boards.

3,562,118

METAL PLATED PLASTICS AND PROCESS THEREFOR

Frederick L. Baier, South Plainfield, and Fred H. Ancker, Bound Brook, N.J., assignors to Union Carbide Corporation, a corporation of New York

No Drawing. Filed Mar. 24, 1966, Ser. No. 536,986

Int. Cl. C23b *5/64;* **B44d** *1/40*

U.S. Cl. 204—30 **3 Claims**

1. Process for imparting adhesion of metal coatings to propylene polymer substrates in excess of about 5 pounds per inch which comprises incorporating at least one hydrocarbon elastomer containing tertiary aliphatic or allylic hydrogens in a repeating unit thereof into a propylene polymer containing at least about 90 percent propylene and having an annealed crystallinity of at least about 40 percent, said elastomer being incorporated into said propylene polymer in amounts of from about 5 to 25 percent by weight commensurate with the degree of crystallinity of the propylene polymer, oxidizing the surface of the resulting propylene polymer mixture, and thereafter metal plating the oxidized propylene polymer mixture.

3,562,119

PRESENSITIZED ALUMINUM PHOTOLITHOGRAPHIC ETCHED PLATE AND ELEMENTS AND METHOD USED IN THE PREPARATION OF SAME

John W. Krueger, Cottage Grove, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis., a corporation of Wisconsin

Filed Oct. 13, 1966, Ser. No. 586,442

Int. Cl. B44c *1/22;* **C23b** *1/00*

U.S. Cl. 204—33 **13 Claims**

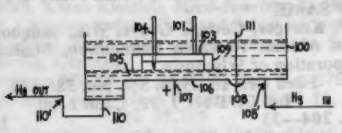
A diazo presensitized photolithographic plate in which a coating of light sensitive diazo compound is applied to the aluminum surface of the plate while scouring the surface of the plate.

3,562,120
PLATING OF SMOOTH, SEMIBRIGHT GOLD DEPOSITS
Robert Duva, Paramus, and Atkin Simonian, Fort Lee, N.J., assignors to Sel-Rex Corporation, Nutley, N.J., a corporation of New Jersey
No Drawing. Filed Sept. 7, 1966, Ser. No. 577,618
Int. Cl. C23b 5/28
U.S. Cl. 204—46 15 Claims
A process and product formed by electrolysis of an aqueous acid gold bath having soluble thallium salt therein for uniform, smooth deposition of pure gold.

3,562,121
ANODISING OF ALUMINIUM AND ITS ALLOYS
James M. Kape, West Molsey, and William B. Hannaby, Wembley, England, assignors to Acorn Anodising Company Limited, London, England, a company of Great Britain
No Drawing. Continuation-in-part of application Ser. No. 598,966, Dec. 5, 1966. This application Jan. 2, 1968, Ser. No. 694,810
Claims priority, application Great Britain, Nov. 22, 1967, 53,097/67
Int. Cl. C23b 9/02
U.S. Cl. 204—58 3 Claims
This invention relates to a method of anodising aluminium and its alloys, for example, in the form of wrought or cast articles in a sulphuric acid electrolyte to which has been added either during or before anodising a substance which will impart nitrate ions to the electrolyte. Such substances include nitric acid and soluble nitrates and nitrites.

3,562,122
PREPARATION OF PLATINUM METAL OXIDE REDUCTION CATALYST
James O. Thieme and Richard L. Every, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla., a corporation of Delaware
Filed Dec. 21, 1967, Ser. No. 692,343
Int. Cl. B01j 11/08; B01k 1/00
U.S. Cl. 204—61 11 Claims
A method of preparing oxides of the platinum group of metals useful as reduction catalysts comprising passing an electric current through a molten solution of an oxygen-producing fused salt electrolyte using as the anode the metal of the desired oxide, to form on the anode a mixture of the metal and metal oxide which flakes off, is collected and separated from the fused salt electrolyte.

3,562,123
OPERATION OF ALKALI METAL CHLORINE CELLS
William W. Carlin, Portland, and Carl W. Raetzsch, Corpus Christi, Tex., assignors to PPG Industries Inc., Pittsburgh, Pa., a corporation of Pennsylvania
Filed Apr. 11, 1967, Ser. No. 630,055
Int. Cl. C01d 1/08; C01b 11/26
U.S. Cl. 204—99 8 Claims



Improved mercury cell operation is achieved by removing from a mercury cell during operation a side stream of amalgam. Amalgam removed from an operating mercury cell is typically denuded and then subjected to electrolysis to cause metal impurities in the mercury resulting from the denuding operation to be plated out on the cathode of the electrolytic cell used for such electrolysis. In the electrolytic cell used for purification the mercury forms the anode of the cell. Mercury substantially depleted of metal ion impurities is returned to the mercury cell from which it was removed thereby enhancing the operation of the main mercury cell by the removal of said metal ion impurities.

3,562,124
COMPOSITION FOR CORROSION PROTECTION
Edward Leon, East Aurora, and Joseph A. Pawlak, Cheektowoga, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y., a corporation of New York
No Drawing. Filed Aug. 2, 1968, Ser. No. 749,615
Int. Cl. C23f 13/00
U.S. Cl. 204—148 15 Claims
A composition suitable for the protection of corrodible metallic surfaces which comprises a binder and a filler, the filler being present in an amount sufficient to impart corrosion resistant characteristics to the composition. The filler is constituted by a mixture of conductive metal particles which are more anodic than the metal of the metallic surface to be protected and comminuted refractory ferro alloys, the refractory ferro alloy being present in an amount sufficient to enhance the corrosion protection and effectiveness of the metal particles. Various binder materials, both organic and inorganic may be used and the filler is preferably a mixture of zinc particles and the refractory ferro alloy.

3,562,125
METHOD FOR THE RADIATION PRODUCTION OF FILMS FROM UNSATURATED POLYESTER RESINS
Rene Leopold Eduard Van Gasse, Schoten, Antwerp, Belgium, assignor to N.V. Chemische Industrie Synres, Hoek van Holland, Netherlands, a corporation of the Netherlands
Continuation of application Ser. No. 651,518, July 6, 1967. This application Feb. 24, 1970, Ser. No. 14,733
Claims priority, application Netherlands, July 8, 1966, 6609608
Int. Cl. B01j 1/10; C08f 1/00, 21/00
U.S. Cl. 204—159.15 3 Claims
A method for the almost complete polymerization of unsaturated polyester resins in a very short time to produce films from such resins. The ratio of equivalence between unsaturated monomer and olefinically unsaturated bonds in the polyester chain ranges between 1.0 and 1.7. Polymerization is effected by radiation with high energy electrons, the radiant energy being higher than 1×10^8 erg/g./sec.

3,562,126
FIXING OF ELECTROPHORETIC DEPOSITS
Irving J. Hess, Philadelphia, Pa., assignor to General Electric Company, a corporation of New York
No Drawing. Filed Nov. 14, 1968, Ser. No. 775,905
Int. Cl. B01k 5/00; C23b 13/00
U.S. Cl. 204—181 1 Claim
In fixing by exposure to radiant heat an electrophoretically produced deposit upon an anodized surface, the process is expedited (or, alternatively, the required temperature is reduced) by depositing upon the said deposit, prior to heating, an auxiliary black deposit of carbon which has very high absorptivity and so receives the

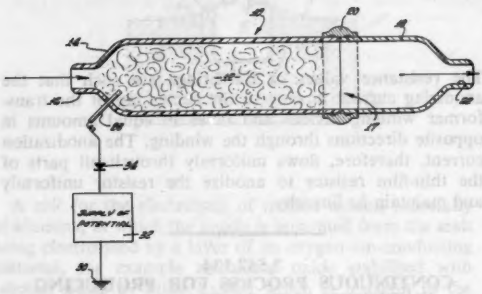
radiant heat faster than the non-black deposit. The auxiliary coating is removed after completion of the heating operation.

3,562,127

TREATMENT OF EXHAUST GASES CONTAINING NITROGEN OXIDES AND OTHER NOXIOUS COMPOUNDS

Thomas C. Wooton, El Monte, and William F. Mangold, West Covina, Calif., assignors to Scientific Industries of California, El Monte, Calif., a corporation of California

Filed May 28, 1969, Ser. No. 828,649
Int. Cl. B03c 3/00
U.S. Cl. 204—164 4 Claims



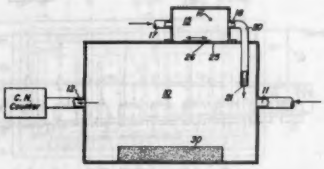
A method of treating gases containing noxious oxides, particularly oxides of nitrogen, without subjecting said gases to catalytic action, wherein the gases are intimately contacted with a porous body composed of fibers plated with gold, the porous body being negatively charged.

3,562,128

APPARATUS FOR GAS CONVERSION AND FOR MEASURING AMMONIA AND SULFUR DIOXIDE CONTAMINANTS IN A GAS

Peter E. Coffey, Ballston Spa, N.Y., assignor to General Electric Company, a corporation of New York

Filed Dec. 26, 1967, Ser. No. 693,336
Int. Cl. B01k 1/00; G01h 31/00, 33/00
U.S. Cl. 204—193 1 Claim



A gas conversion apparatus is disclosed for use in conjunction with a condensation nuclei counter in the detection and measurement of ammonia and sulfur dioxide in a gas such as air. The apparatus includes a reaction chamber substantially filled with acid vapor, a separate corona discharge chamber, means for passing clean gas through the corona discharge chamber wherein ions are produced therein and means for injecting the ionized gas into the reaction chamber, means for passing the gas to be analyzed through the reaction chamber with the ionized gas to produce ammonium salt condensation nuclei, and means to selectively expose the gases in the reaction chamber to ultraviolet light to convert any sulfur dioxide to sulfur trioxide.

3,562,129

CATION-SPECIFIC ELECTRODE SYSTEM

Wilhelm Simon, Oberembrach, Switzerland, assignor to Gebruder Moller Glasblaserie, Inhaber Willi Moller, Zurich, Switzerland

Filed Aug. 3, 1967, Ser. No. 658,284
Claims priority, application Switzerland, Aug. 9, 1966, 11,428/66
Int. Cl. G01n 27/46
U.S. Cl. 204—195 13 Claims

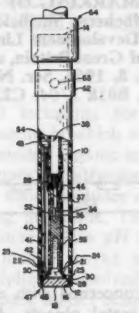
The present invention concerns an electrode system used for measuring cation activities and having a membrane in which said membrane comprises a cation specific component which forms a complex with the cation, the activity of which is to be determined, and which cation specific component is selected from the group comprising nonactin and its homologues, gramicidin and valinomycin. These electrode systems show unexpected selectivity and especially have a very high specificity for potassium ions over sodium ions. The invention furthermore is directed to a process for producing the said electrode system in which a membrane, which comprises the ion specific component and an inert material, is produced by impregnating the inert carrier material with a solution of the ion specific component.

3,562,130

PLASTIC ION SENSITIVE COMBINATION ELECTRODE

Duane W. Hoole, Huntington Beach, and Gerald L. Klein, Orange, Calif., assignors to Beckman Instruments, Inc., a corporation of California

Filed Apr. 12, 1968, Ser. No. 720,994
Int. Cl. G01n 27/46
U.S. Cl. 204—195 9 Claims

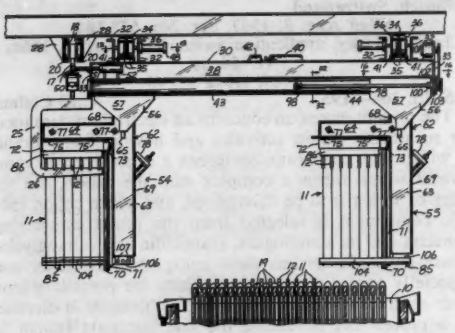


Ion sensitive combination electrochemical electrodes formed primarily of plastic without the use of glass within the structures are disclosed. In one embodiment an ion sensitive membrane such as a LaF_3 crystal is in contact with a copper tube containing an electrolyte, the copper tube being bonded to the LaF_3 crystal. The copper tube and lateral surface of the LaF_3 are coated with a plastic to provide electrical insulation and a seal against liquid. A second embodiment includes a plastic tube supporting a silver chloride coated silver wire with an electrolyte being disposed within the tube in contact with a LaF_3 crystal. A compression ring is formed about the plastic tube and the LaF_3 crystal to provide a biasing force holding the tube and the crystal in a sealed relationship. In each embodiment a flush sensing surface including a liquid junction structure is provided.

3,562,131
CATHODE HANDLING EQUIPMENT

Peter M. Jasberg, Kellogg, Idaho, assignor to The Bunker Hill Company, Kellogg, Idaho, a corporation of Delaware

Filed Mar. 21, 1968, Ser. No. 715,018
Int. Cl. B65g *49/00*
U.S. Cl. 204—198 **16 Claims**

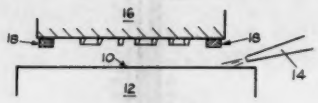


Cathode handling equipment for use in connection with electrowinning operations utilizing electrolytic cells wherein metal is periodically deposited and removed from plate-like cathodes. The present structure provides an automated mechanism for pulling and replacing groups of cathode units in the cell, transferring cathodes between a cell and an overhead conveyor. The cathode handling equipment is mounted on a bridge capable of travelling along the length of the row of cells, being properly indexed at each cell. The cathode handling units can be indexed to handle differing groups of cathode units within the respective cells.

3,562,132
ELECTROLYTIC MARKING OF METAL OBJECTS

Albert Edward Godbehere, Sheffield, England, assignor to Edward Pryor Development Limited, Sheffield, England, a company of Great Britain, and Northern Ireland

Filed Apr. 8, 1968, Ser. No. 719,543
Int. Cl. B01k *3/04;* **C23b** *5/72*
U.S. Cl. 204—224 **5 Claims**



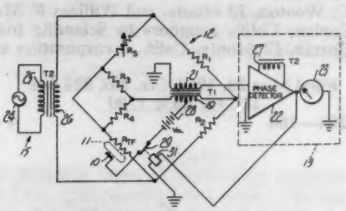
The invention is concerned with electrolytically marking the surface of metal objects. Apparatus for carrying out the invention includes an electrode having an operative face bearing markings with which it is desired to mark said surface. Flooding means is provided for flooding the surface with electrolyte. And means are provided for applying electric current to sustain electrolytic action.

3,562,133
CIRCUIT FOR UNIFORMLY ANODIZING THIN-FILM RESISTORS

Robert C. Ward, Winston-Salem, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y., a corporation of New York

Filed Nov. 18, 1968, Ser. No. 776,396
Int. Cl. B01k *3/00*
U.S. Cl. 204—228 **9 Claims**

A thin-film resistor is anodized to increase its resistance to a preselected value while connected as one arm of a bridge circuit which utilizes an A.C. voltage for a resistance measurement. Opposite ends of the primary winding of a transformer are connected across the measuring diagonal of the bridge. A D.C. anodizing current source is connected to a center tap of the primary transformer winding and to the thin-film resistor through an electrolyte.

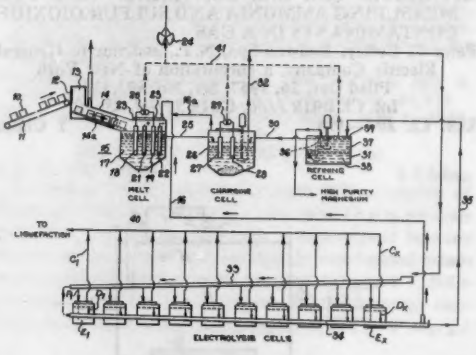


The resistance values of the bridge are such that the anodizing current flowing to the center tap of the transformer winding divides and flows in equal amounts in opposite directions through the winding. The anodization current, therefore, flows uniformly through all parts of the thin-film resistor to anodize the resistor uniformly and maintain its linearity.

3,562,134
CONTINUOUS PROCESS FOR PRODUCING MAGNESIUM METAL FROM MAGNESIUM CHLORIDE

Frank E. Love, Henderson, Nev., assignor to National Lead Company, New York, N.Y., a corporation of New Jersey

Original application June 8, 1966, Ser. No. 556,108, now Patent No. 3,418,223, dated Dec. 24, 1968. Divided and this application Sept. 3, 1968, Ser. No. 801,879
Int. Cl. B01k *3/00;* **C22d** *3/02*
U.S. Cl. 204—239 **3 Claims**



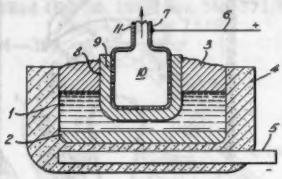
Apparatus for the continuous production of magnesium metal and chlorine gas from magnesium chloride, comprising heated and interconnected melt and charging cells for providing a molten magnesium chloride containing electrolyte, a refining cell, a series of aligned electrolysis cells having overflow weirs for said molten electrolyte, a pair of oppositely inclined feeder and delivery launders extending along said electrolysis cells the former for feeding said molten electrolyte from said charging cell to said electrolysis cells, and the latter for delivering molten magnesium metal containing electrolyte from said electrolysis cells to said refining cell, the refining cell having a

semi-wall for isolation and withdrawal of the molten magnesium metal and for recycling the electrolyte to the refining cell.

3,562,135
ELECTROLYTIC CELL

Borut Marincek, Kusnacht, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland, a joint-stock company of Switzerland

Filed May 15, 1967, Ser. No. 638,249
Claims priority, application Switzerland, May 17, 1966, 7,275/66
Int. Cl. B01k *3/04, 3/06;* C22d *3/02*
U.S. Cl. 204—243 **4 Claims**

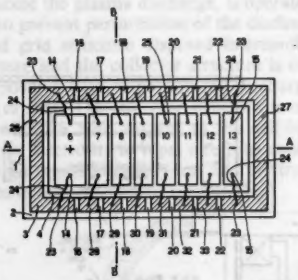


A cell for the electrolysis of molten oxides, especially of alumina, in which the anode is separated from the melt being electrolysed by a layer of an oxygen-ion-conducting material, for example zirconium oxide stabilised with calcium oxide or other oxides, which is resistant to the melt at the temperature of the electrolysis.

3,562,136
IGNEOUS-ELECTROLYSIS MULTICELL FURNACES, FOR THE PROTECTION OF THE INNER LAYER IN CONTACT WITH MOLTEN SALTS

Giuseppe de Varda and Alberto Vajna de Pava, Milan, Italy, assignors of seventy percent to Montecatini Edison S.p.A., Milan, Italy, and thirty percent to Guiseppe de Varda

Filed Mar. 25, 1968, Ser. No. 715,806
Claims priority, application Italy, Mar. 24, 1967, 14,105/67
Int. Cl. C22d *3/02*
U.S. Cl. 204—243 **10 Claims**

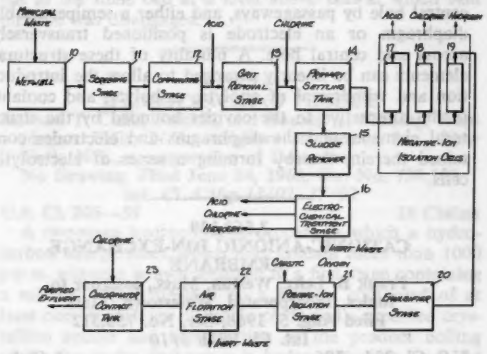


Described is a furnace for the electrolysis in molten bath of electrolytically aggressive salts, in particular a multicell furnace having bipolar electrodes, for the production of aluminum or of magnesium, having an electrolysis vat the bottom and the walls whereof comprise a layer of electrically conducting material, in particular of carbonaceous material, internally (that is on the bath side) coated with a layer of refractory material substantially insulating the electrical current. In order to eliminate or reduce the bypass of electric current through the layer of said refractory material and the increase of corrosion resulting therefrom on said bottom and on said walls by the molten mass of the bath penetrating into the respective porosities or cracks, the furnace is characterized in that the vat layer or layers, being better electrical conductors, are made discontinuous along the dimension corresponding to the direction of the electrolysis current, by at least one separating baffle, diaphragm or transverse layer made of practically electroinsulating refractory material thus dividing the vat into portions. The terminal electrodes are electrically connected with the corresponding vat portions made of conducting, e.g. carbonaceous material, by means outside the electrolytical bath.

3,562,137
SYSTEM FOR ELECTROCHEMICAL WATER TREATMENT

Newton P. Gehring, Largo, Fla., assignor to Fischer & Porter Co., Warminster, Pa., a corporation of Pennsylvania

Filed Jan. 22, 1968, Ser. No. 699,415
Int. Cl. B01d *13/02;* B01k *3/00*
U.S. Cl. 204—258 **15 Claims**



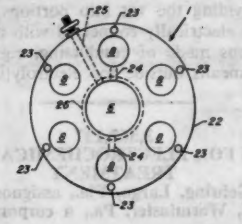
An electrochemical technique for water-purification and waste-water treatment, in which waste water containing dissolved and suspended organic and inorganic matter is fed into one or more negative-ion isolation electrodialysis cells, each of which includes an anion-permeable membrane surrounding an anode. The cells are serially arranged and act to increase the pH factor of the waste water in a stepwise manner to an extent causing pH-sensitive salts to precipitate, dissolved constituents being demineralized and organic matter being oxidized. Electrodialysis is accompanied in the cell by electrolysis, causing hydrogen and oxygen bubbles to evolve, the hydrogen bubbles effecting coagulation and flotation of the suspended and precipitated matter and at the same time scavenging the outer surface of the membrane to prevent fouling and scaling thereof, the inner surface being scavenged by the oxygen bubbles.

The outflow of the negative-ion cells is supplied to a positive-ion isolation chamber provided with cation-permeable membranes. This chamber, through the combined action of electrodialysis and electrolysis, functions to decrease the pH factor of the waste water, as well as to further oxidize organic matter, oxygen and hydrogen bubbles generated therein serving to scavenge the surfaces of the cation-permeable membranes. The output of the positive-ion chamber is supplied to an air-flotation unit or other means to separate the coagulated and suspended solids from the ion-treated water, thereby yielding purified water.

3,562,138
STRUCTURAL ELEMENT FOR USE IN AN ELECTROLYTIC CELL

Rudolf H. Hausler, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill., a corporation of Delaware

Filed Dec. 18, 1968, Ser. No. 784,632
Int. Cl. B01k 3/00
U.S. Cl. 204—279 12 Claims

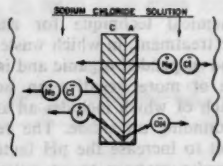


A structural element of an electrolytic cell comprising an electrically insulating solid element perforated by parallel holes, one of which is centrally located in the member and the remainder of which are symmetrically positioned around said central hole. Two of the opposing symmetrically positioned holes are connected to said central hole by passageways, and either a semipermeable diaphragm or an electrode is positioned transversely across said central hole. A plurality of these structural elements can be linearly arranged to allow the introduction and withdrawal of anolyte, catholyte, and coolant, in the alternative to the cavities bounded by the structural elements and the diaphragms and electrodes contained therein, thereby forming a series of electrolytic cells.

3,562,139
CATIONIC-ANIONIC ION-EXCHANGE MEMBRANE

Frank B. Leitz, Weston, Mass., assignor to Ionics, Incorporated, Watertown, Mass.

Filed Aug. 5, 1968, Ser. No. 750,312
Int. Cl. B01k 3/10
U.S. Cl. 204—296 6 Claims



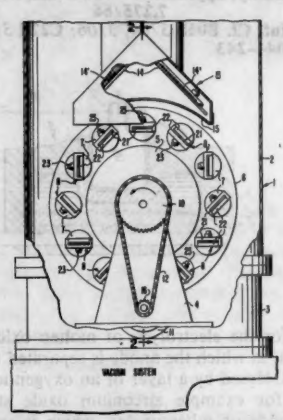
Method and apparatus for the deionization of electrolyte solutions wherein alternatingly oriented anion-cation bilaminate ion-exchange membranes define the chambers of a multichamber electrodialysis cell and wherein the anion exchange laminae of each of said membranes bound the salt diluting chambers and the cation exchange laminae bound the salt concentrating chambers. A direct electric current is passed transversely through all of said chambers and membranes which current is periodically reversed.

3,562,140
SEQUENTIAL SPUTTERING APPARATUS

James R. Skinner, Cupertino, and Lawrence F. Herte, Palo Alto, Calif., assignors, by mesne assignments, to Eversharp, Inc., Milford, Conn., a corporation of Delaware

Filed Oct. 23, 1967, Ser. No. 677,160
Int. Cl. C23c 15/00
U.S. Cl. 204—298 6 Claims

Increased production yields with relative savings in time and expense are made possible with sputtering apparatus used in coating selected surfaces of objects, such as the cutting edges of razor blades in which provision is made for sequentially presenting a plurality of objects to cathode-sputter targets for coating. Twelve bayonets, each adapted to hold as many as 1500 razor blades, are equally spaced about the periphery of a rotatable drum. By means of an epicyclic chain and gear train, each

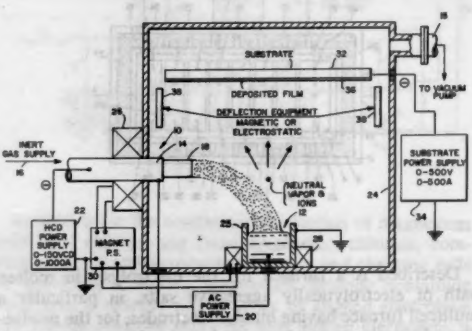


bayonet rotates ½ revolution with respect to the drum during each revolution of the drum. This permits the coating of opposing surfaces of each of the objects to be coated in a maximum of two drum revolutions which, in the instant case, is 36 minutes for coating the cutting edges of double edged razor blades with 600 A. of chromium.

3,562,141
VACUUM VAPOR DEPOSITION UTILIZING LOW VOLTAGE ELECTRON BEAM

John R. Morley, Rutland St., Carlisle, Mass. 01741

Filed Feb. 23, 1968, Ser. No. 707,863
Int. Cl. C23c 15/00
U.S. Cl. 204—298 5 Claims



Rapid deposition rates and efficient material utilization are achieved in a vacuum vapor deposition system by a low voltage, high current electron beam arrangement for heating the material to a sufficiently high temperature

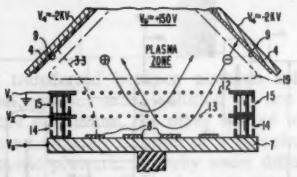
for vaporization, for ionizing the vaporized material in order to impart a positive charge thereto and for electrostatically and/or electromagnetically attracting the ionized, vaporized material to a substrate, at which deposition of the material occurs.

3,562,142

R.F. SPUTTER PLATING METHOD AND APPARATUS EMPLOYING CONTROL OF ION AND ELECTRON BOMBARDMENT OF THE PLATING

Lawrence T. Lamont, Jr., Palo Alto, Calif., assignor to Varian Associates, Palo Alto, Calif., a corporation of California

Filed Oct. 30, 1968, Ser. No. 771,797
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 3 Claims



An R.F. sputter plating method and apparatus is disclosed. The plating apparatus includes a partially evacuated deposition chamber containing a pair of electrodes excited with radio frequency energy to produce a radio frequency plasma discharge in the region therebetween. The R.F. discharge defining electrodes are operated at a floating potential such that, by the nature of the plasma discharge, a relatively high negative self-bias potential is established on the R.F. electrodes. A target material is placed on the R.F. electrodes to be sputtered by ion bombardment, such ions emanating from the plasma discharge. A collector electrode is disposed to receive the sputtered target material to plate the collector electrode or items carried thereon. A pair of transparent grid structures are disposed intermediate the collector electrode and the plasma discharge region. A first one of the grid structures, adjacent the plasma discharge, is operated at ground potential to prevent perturbation of the discharge, whereas the second grid structure disposed intermediate the first grid structure and the collector structure is operated at a potential positive with respect to the discharge for repelling positive ions. The collector structure is operated at a potential negative with respect to the self-bias potential on the target electrodes to repel electrons emanating from the discharge region, whereby ion and electron bombardment of the items being plated is controlled.

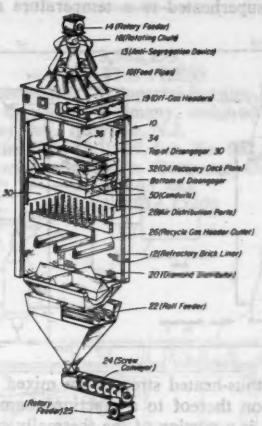
3,562,143

LIQUID DISENGAGING SYSTEM

Kenneth I. Jagel, Jr., Mantua Township, Gloucester County, David Liederman, Pennsauken Township, Camden County, and Lester J. Skowronek, Tenafly, N.J., assignors to Mobil Oil Corporation, a corporation of New York

Filed May 27, 1968, Ser. No. 732,338
Int. Cl. C10g *1/02;* C10b *1/04*
U.S. Cl. 208—11 4 Claims

The efficiency and yield of the gas combustion retorting process for recovering valuable hydrocarbons from oil shale is improved by disengaging a mixture of gas and oil from the downwardly moving shale, separating the oil from the gas in a shale-free area and returning the gas to the shale bed at a level above that at which said mixture was disengaged.



3,562,144

HYDROCRACKING PROCESS

Edward T. Child, Fishkill, and Donald A. Messing, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y., a corporation of Delaware

No Drawing. Filed June 24, 1968, Ser. No. 739,183
Int. Cl. C10g *13/02, 37/02*
U.S. Cl. 208—59 10 Claims

A two-stage hydrocracking process in which a hydrocarbon charge stock which may contain more than 1000 p.p.m. nitrogen is hydrocracked in a first stage containing a sulfided nickel tungsten on a support composed of at least one amorphous inorganic oxide and a modified crystalline zeolite and that portion of the product boiling above the motor fuel range is hydrocracked in a second stage containing a noble metal catalyst.

3,562,145

STABLE HYDROCARBON LUBRICATING OILS AND PROCESS FOR FORMING SAME

William G. Franz, Woodbury, and Michael T. Smilski, Mantua Township, Gloucester County, N.J., assignors to Mobil Oil Corporation, a corporation of New York

No Drawing. Continuation-in-part of application Ser. No. 616,197, Feb. 15, 1967. This application Aug. 15, 1969, Ser. No. 850,667
Int. Cl. C10g *37/00, 39/00*
U.S. Cl. 208—96 8 Claims

Hydrocarbon lubricating oil resistant to deterioration upon exposure to light and air is formed by contacting selected high boiling hydrocarbons with a hydrocracking catalyst and hydrogen, separating a lubricating oil fraction from the product and extracting the fraction in multiple stages with a solvent selective for cyclic hydrocarbons.

3,562,146

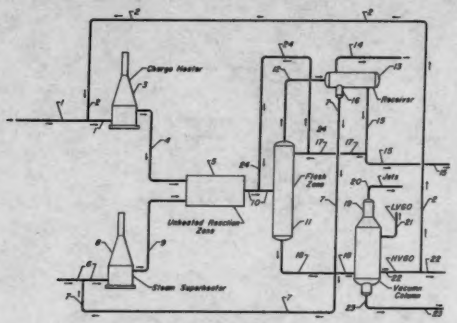
STEAM CRACKING PROCESS

Richard M. Deanesly, Hinsdale, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill., a corporation of Delaware

Filed Dec. 12, 1968, Ser. No. 783,254
Int. Cl. C10g *9/36*
U.S. Cl. 208—130 5 Claims

A process for steam-thermal cracking a hydrocarbonaceous charge stock containing an asphaltic, nondistillable

residuum. The charge stock, including a lower-boiling, normally liquid diluent is heated to a temperature below that at which thermal cracking is effected, while the steam is separately superheated to a temperature above about



950° F. The thus-heated streams are mixed just prior to the introduction thereof to a reaction chamber. The recycled diluent is a portion of the thermally-cracked product effluent.

3,562,147

CATALYTIC REFORMING OF HYDROCARBONS

Ernest L. Pollitzer, Skokie, and John C. Hayes, Palatine, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill., a corporation of Delaware

No Drawing. Filed Apr. 24, 1968, Ser. No. 723,897

Int. Cl. C10g *35/08*

U.S. Cl. 208—139 **7 Claims**

Concerns an improvement in a continuous process for the catalytic reforming of a gasoline fraction to produce a high octane reformate stream. Catalyst utilized comprises a platinum group metallic component, a rhenium component, a halogen component, and a sulfur component, all of which are composited with an alumina carrier material. Improved process involves continuously contacting the gasoline fraction, hydrogen, and about 50 to 3000 wt. p.p.m. of equivalent sulfur, based on the hydrocarbon fraction, with the catalyst at reforming conditions—particularly, a pressure of about 100 to 350 p.s.i.g. Points of improvement involves: overall stability, catalyst life before regeneration, and rate of deposition of carbonaceous deposits on the catalyst.

3,562,148

CONVERSION OF HYDROCARBONS WITH A CATALYST COMPRISING A HALOGEN COMPONENT COMBINED WITH A SUPPORT CONTAINING ALUMINA AND FINELY DIVIDED CRYSTALLINE ALUMINOSILICATE PARTICLES

Roy T. Mitsche, Island Lake, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill., a corporation of Delaware

No Drawing. Application May 9, 1968, Ser. No. 728,070, which is a continuation-in-part of application Ser. No. 517,845, Dec. 30, 1965. Divided and this application Mar. 19, 1969, Ser. No. 808,685

The portion of the term of the patent subsequent to Sept. 2, 1986, has been disclaimed

Int. Cl. B01j *11/12*; C10g *35/08*

U.S. Cl. 208—139 **12 Claims**

Hydrocarbons are converted with a catalyst comprising a halogen component combined with a support containing alumina and finely divided crystalline aluminosilicate particles. Key feature of the process involves the preparation of the catalyst from an aluminum hydroxyl halide sol to which finely divided particles of crystalline aluminosilicate are added, thereby effecting some basic enhancement of the ability of the resultant catalyst to accelerate hydrocarbon conversion reactions that depend on carbonium ion intermediates: that is, the acidity level of the resultant composite is markedly increased. In addition, this catalyst can be combined with a Group VI or Group VIII metallic component and utilized in a process designed to accelerate a wide variety of reactions of the type which have heretofore utilized dual-function catalysts such as hydro-cracking, reforming, isomerization, etc.

3,562,149

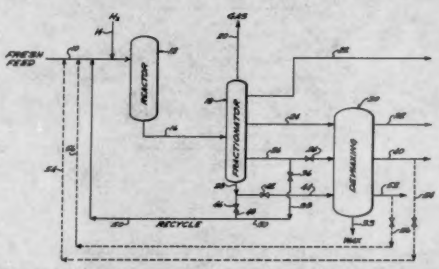
PROCESS FOR PRODUCING LUBRICATING OIL BY HYDROGEN TREATMENT

Millard C. Bryson, Conway, and Harry C. Stauffer, Cheswick, Pa., and James R. Murphy, Huntington Station, N.Y. (all % Gulf Research & Development Co., P.O. Box 2038, Pittsburgh, Pa. 15230)

Continuation-in-part of application Ser. No. 601,587, Dec. 14, 1966. This application Aug. 19, 1969, Ser. No. 858,245

Int. Cl. C10g *23/02*

U.S. Cl. 208—143 **5 Claims**



A process for hydrotreating crude lubricating oil stocks to produce lubricating oils with desired yield-viscosity distribution and viscosity index by recycling a selected fraction to the hydrotreating operation.

3,562,150

REMOVAL OF METAL CONTAMINANTS FROM CATALYSTS WITH HYDROGEN PEROXIDE

Harry A. Hamilton, Natrona Heights, Howard G. McIlvried, Pittsburgh, and Raynor T. Sebulsky, Verona, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa., a corporation of Delaware

No Drawing. Filed June 16, 1967, Ser. No. 651,343

Int. Cl. C10g *23/02*; B01j *11/02, 11/68*

U.S. Cl. 208—216 **8 Claims**

Removal of metal contaminants, such as nickel and vanadium, from a catalyst is effected by treatment of the catalyst with hydrogen peroxide in the liquid state.

3,562,151

DEMETALATION WITH CYANIDE ION

Gordon E. Langlois, Lafayette, Lloyd J. Olson, Oakland, and Charles E. Rudy, Jr., El Cerrito, Calif., assignors to Chevron Research Company, San Francisco, Calif., a corporation of Delaware

No Drawing. Filed Oct. 10, 1968, Ser. No. 766,650

Int. Cl. C10g *17/00, 29/02*

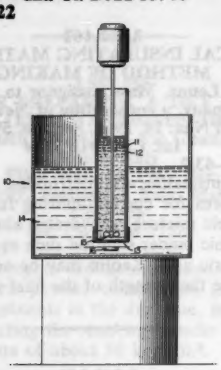
U.S. Cl. 208—251 **9 Claims**

A process for the removal of iron from iron-contaminated hydrocarbon oil by contacting the oil with a treating agent comprising an aqueous solution of cyanide ion. Iron may be selectively removed from an oil contaminated with nickel and vanadium as well as iron. A refinery foul water may be the source of the cyanide ion.

ERRATUM

For Class 210—10 see:
Patent No. 3,561,598

3,562,152
OSMOSIS, REVERSE OSMOSIS PROCESS
Richard R. Davison, Bryan, Tex., assignor to Research Corporation, New York, N.Y., a nonprofit corporation of New York
Filed May 29, 1968, Ser. No. 733,161
Int. Cl. B01d *13/00*
U.S. Cl. 210—22 2 Claims

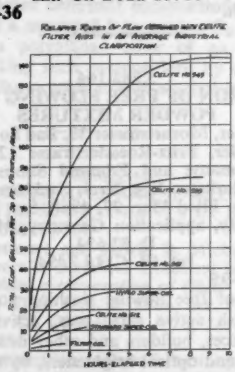


Water is transferred between aqueous solutions by contacting an aqueous saline solution on one side of a semipermeable membrane, the other side of which is in contact with an aqueous solution of a polyelectrolyte at a higher osmotic pressure, whereby water diffuses across the membrane from the saline solution to the polyelectrolyte solution.

3,562,153
OIL ABSORBENT COMPOSITIONS
Paul R. Tully, Lowell, Robert J. Lippe, Methuen, and William J. Fletcher, Saugus, Mass., assignors to Cabot Corporation, Boston, Mass., a corporation of Delaware
No Drawing. Filed Feb. 5, 1970, Ser. No. 9,058
Int. Cl. E02b *15/04*
U.S. Cl. 210—36 19 Claims

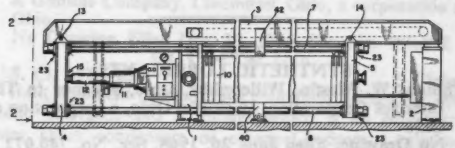
A composition and process is provided for the removal of oily contaminants from water systems. Absorbent materials are treated with certain hydrophobic colloidal solids. The treated material is then contacted with the contaminated water and preferentially absorbs the oil therefrom.

3,562,154
HIGH EFFICIENCY FILTER AID
Donald William Davis, Clinton, and James Michael Baloga and Bruce Chamberlin Olmsted, Jr., Somerville, N.J., assignors to Johns-Manville Corporation, New York, N.Y., a corporation of New York
Filed May 26, 1965, Ser. No. 458,883
Int. Cl. B01d *15/00*
U.S. Cl. 210—36 7 Claims



Simultaneously improved flow rate and turbidity removal by adding to the turbid solution to be filtered an animal protein gelatin or glue, or by coating a filter aid with an animal protein gelatin or glue.

3,562,155
FILTER PRESS
Karl A. Rademacher, Wuppertal-Barmen, and Hans J. Heinrich, Ennepetal, Germany, assignors to T. Shriver & Company, Inc., Harrison, N.J.
Filed Feb. 25, 1969, Ser. No. 802,179
Claims priority, application Germany, Oct. 23, 1968, G 6 803 483
Int. Cl. B01d *25/00*
U.S. Cl. 210—224 9 Claims



A filter press is disclosed which provides for high pressure working of a plurality of filter chambers without breaking the filter press parts, especially the structure forming these chambers. Three links arranged in series between a single cylinder/piston drive unit and a pressure plate, which acts on one end of a series arranged pack of filter plates, provides a very delicate fit between the pressure plates and the pack of filter plates to provide for an avoidance of pressure strains on the plates to prevent them from being broken.

3,562,156
FIRE EXTINGUISHING COMPOSITION COMPRISING A FLUOROALIPHATIC SURFACTANT AND A FLUORINE-FREE SURFACTANT
Vernon L. Francen, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn., a corporation of Delaware
Continuation-in-part of application Ser. No. 722,630, Apr. 19, 1968. This application June 12, 1969, Ser. No. 840,102
Int. Cl. A62c *1/12;* A62d *1/00*
U.S. Cl. 252—8.05 12 Claims

Compositions are disclosed which form tough, durable, rapidly-forming and spreading films on the surface of hydrocarbon liquids comprising in combination a water-soluble fluoroaliphatic surfactant and a water-soluble synthetic imputrescible hydrocarbon-congruous organic fluorine-free surfactant and water. The films formed by these compositions are especially effective in suppressing the vaporization of hydrocarbon liquids into the air and are, therefore, useful for extinguishing liquid hydrocarbon fires.

3,562,157
INHIBITING BACTERIAL GROWTH WITH MALEALDEHYDE
Merwin Frederick Hoover, Bethel Park, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.
No Drawing. Filed Sept. 20, 1967, Ser. No. 669,258
Int. Cl. C09k *3/00*
U.S. Cl. 252—8.55 2 Claims

The use of malealdehyde as a bacteriostatic and bactericidal agent is disclosed.

3,562,158

TEXTILE SOFTENING COMPOSITIONS

Denis Varsanyi, Arlesheim, Basel-Land, and Willy Roth, Strengelbach, Aargau, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y., a corporation of New York

No Drawing. Continuation-in-part of application Ser. No. 560,855, June 27, 1966. This application Oct. 4, 1967, Ser. No. 672,725

Claims priority, application Switzerland, June 30, 1965, 9,158/65

Int. Cl. C08h *9/06*; C09g *1/08*; D06m *13/36*

U.S. Cl. 252—8.8 5 Claims

Certain new tris-amino-s-triazines and N,N-bis-(bis-amino-s-triazinyl)-alkylamines are textile softening agents. Compositions containing these and other new tris-amino-s-triazines and N,N-bis-(bis-amino-s-triazinyl)-alkylamines and certain 1,4-bis-(bis-amino-s-triazinyl)-piperazines are also useful for other surface treating purposes, particularly as floor waxes and shoe polishes.

3,562,159

SYNTHETIC LUBRICANTS

Thomas W. Mastin, Willoughby, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio, a corporation of Ohio

No Drawing. Filed June 26, 1968, Ser. No. 740,072

Int. Cl. C10m *3/42*

U.S. Cl. 252—32.7 9 Claims

Novel synthetic lubricants contain a carboxylic acid ester of lubricating viscosity as the basic liquid and, as additives, an acylated alkylene polyamine, a basic alkaline earth metal sulfonate, a metal phosphorodithioate, and (optionally) a basic alkaline earth metal salt of a phosphosulfurized hydrocarbon, an ester of a hydrocarbon-substituted succinic acid, and a basic alkaline earth metal salt of an alkylphenol sulfide. The lubricants must contain no more than about 15% (by weight) mineral oil.

3,562,160

LUBRICATING OIL COMPOSITION

John Frederick Ford, Camberley, Surrey, and John Michael Woodl, Ashford, Middlesex, England, assignors to The British Petroleum Company Limited, London, England, a corporation of England

No Drawing. Original application Mar. 24, 1965, Ser. No. 442,522. Divided and this application Dec. 19, 1967, Ser. No. 708,743

Int. Cl. C10m *1/32*, *1/44*

U.S. Cl. 252—49.9 1 Claim

Lubricating compositions are provided comprising a lubricating base oil and a phosphorus- and nitrogen-containing polymeric additive, the polymeric additive being prepared by a combined phosphorylation/polymerisation reaction of an alphaolefin having up to twenty carbon atoms with a phosphorus halide in the presence of a Friedel-Crafts polymerisation catalyst, the molar ratio of olefin to phosphorus halide being 100:0.1–25, and the Friedel-Crafts polymerisation catalyst being present in at least a 1.5:1 molar excess over the phosphorus halide to obtain a phospho-halogenated polymer which is, thereafter, reacted with an amine.

3,562,161

POLYALKYLENE GLYCOL ESTERS OF ETHYLENEDIAMINETETRAACETIC ACID AS LUBRICANT DISPERSANTS

Frederick F. Caserio, Jr., Laguna Beach, and Ting-I Wang, Fullerton, Calif., assignors to Atlantic Richfield Company, Philadelphia, Pa., a corporation of Pennsylvania

No Drawing. Filed Oct. 8, 1968, Ser. No. 775,981

Int. Cl. C10m *1/32*

U.S. Cl. 252—51.5 4 Claims

A new class of compounds and a series of novel lubricant compositions are disclosed. Polyalkylene glycol-ethylenediaminetetraacetic acid addition compounds which are useful as dispersants in polyalkylene glycol lubricant fluids as sludge dispersants and lubricant fluid compositions including such compounds are described.

3,562,162

ELECTRICAL INSULATING MATERIAL AND METHOD OF MAKING

John J. Pitha, Lenox, Mass., assignor to General Electric Company, a corporation of New York

Filed Nov. 14, 1966, Ser. No. 593,851

Int. Cl. H01b *3/14*

U.S. Cl. 252—63.2 7 Claims

Electrically insulating arc-interrupting material suitable for making cores for current-limiting fuses is composed of an extrudable mixture of hydrated alumina, bentonite, and an inorganic binder solution such as aluminum phosphate-phosphoric acid. Kaolin may be added to the mixture to increase the strength of the final reaction product.

3,562,163

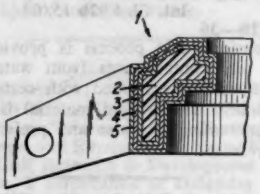
COMPOSITION FOR CONDITIONING PLASTIC PARTS FOR ADHESION

William H. Young, Trumbull, Bela Csuthy, Prospect, and Joseph Guidess, Watertown, Conn., assignors to Timex Corporation, Waterbury, Conn., a corporation of Delaware

Original application May 28, 1965, Ser. No. 459,544, now Patent No. 3,356,144. Divided and this application Mar. 6, 1969, Ser. No. 816,472

Int. Cl. C09k *3/00*

U.S. Cl. 252—79.2 1 Claim



An improved composition for use in conditioning plastic parts of the ABS resinous type for adhesion purposes including an aqueous solution of a mixture of molybdic, phosphoric, sulfuric acids and a water-soluble dichromate salt.

3,562,164

PRODUCTION OF FREE FLOWING WASHING POWDER MIXTURES

Friedrich Bittner, Mozartstrasse 38, Bad Soden, Germany; Artur Schaller, Fritz-Roesslerstrasse 12, Rheinfelden, Baden, Germany; and Edmund Simmersbach, Haus Ne. 24, Willaringen-Egg, Kreis Sackingen, Germany

No Drawing. Filed Mar. 27, 1968, Ser. No. 716,333

Claims priority, application Germany, Mar. 25, 1967, D 52,634

Int. Cl. C11d *7/54*

U.S. Cl. 252—95 6 Claims

Production of free flowing washing powder mixtures containing wash active substances, active oxygen containing substances, builders and other usual components, such as fillers and optical brighteners, by spraying a melt consisting of at least one compound forming a component of the washing powder mixture which is fusible in

its own water of crystallization and which solidifies to a solid phase with excess water unto the upper portion of an upright chamber and blowing the remaining components of the mixture into the spray cone of the melt in the form of a solution, slurry or powder and permitting the resulting mixture to fall down through the chamber to form a granulate.

3,562,165

PROCESS FOR PREPARING A DRY COMPACTED DETERGENT COMPOSITION

Renato Altieri, 2–A Via Guattani, Rome, Italy

No Drawing. Filed Mar. 23, 1967, Ser. No. 625,411
Claims priority, application Italy, Mar. 24, 1966, 6,659/66
Int. Cl. C11d *7/56*
U.S. Cl. 252—99 **4 Claims**

A soap-like compact detergent, consisting of a mixture of dry-compacted powder components is produced by mixing the components in the dry state, milling the mixture and compacting the resulting powder in dies with a minimum pressure of about 30 kg./cm.^{2}.

3,562,166

BUILT DETERGENT COMPOSITIONS

Denzel Allan Nicholson, Springfield Township, Hamilton County, Ohio, and Darrel Campbell, King of Prussia, Pa., assignors to The Procter & Gamble Company, Cincinnati, Ohio, a corporation of Ohio

No Drawing. Filed Dec. 24, 1968, Ser. No. 786,766
Int. Cl. C11d *3/36*
U.S. Cl. 252—152 **9 Claims**

Built detergent compositions containing an organic synthetic detergent and a builder which is ethane-1,2-dicarboxy-1,2-diphosphonic acid, ethane-1,2-dicarboxy-1,2-dihydroxy - 1,2-diphosphonic acid, ethene-1,2-dicarboxy-1-phosphonic acid, and dialkyl (P,P')ethane-1,2-dicarboxy-1,2-diphosphonic acid or alkali metal or ammonium salts thereof in a proportion of detergent to builder of 5:1 to about 1:20.

3,562,167

SOLID TRANSPARENT DETERGENT COMPOSITIONS AND METHOD OF MAKING THE SAME

Melvin E. Kamen, North Bergen, N.J., and Isidore Ugelow, West Babylon, N.Y., assignors to Revlon, Inc., New York, N.Y., a corporation of Delaware

No Drawing. Filed Oct. 28, 1966, Ser. No. 591,394
Int. Cl. C11d *9/26, 9/46, 17/00*
U.S. Cl. 252—121 **10 Claims**

Solid transparent detergent compositions comprising a sodium soap of a saturated fatty acid, a C_2–C_3 polyhydric alcohol, and a polyalkoxy ether of an alkyl phenol. Method of making such compositions by dispersing said soap and polyalkoxy ether in said alcohol at elevated temperatures.

3,562,168

ALKALINE EARTH AND AMINE SALTS OF PHOSPHATE ESTER SURFACTANTS IN DRY CLEANING COMPOSITIONS

Clayton A. Wetmore and Edwin B. Michaels, Fairfield, Conn., assignors to Stamford Chemical Industries, Inc., Cincinnati, Ohio, a corporation of Ohio

No Drawing. Filed Sept. 2, 1966, Ser. No. 576,814
Int. Cl. C11d *1/34, 1/78, 3/44*
U.S. Cl. 252—152 **1 Claim**

Detergent compositions adapted for incorporation into a drycleaning solvent consisting essentially of a mixture of (a) the substantially neutral alkaline earth metal salt of a member selected from the group consisting of phosphoric acid esters of oxyethylated higher alkyl phenol and phosphoric acid esters of oxyethylated higher aliphatic monohydric alcohols, said oxyethylated esters containing from about 1 to 15 oxyethyl groups, and said alkaline eath metal being selected from the group consisting of calcium, magnesium, and the mixtures thereof, and (b) the substantially neutral lower alkylamine and lower alkanolamine salt of said phosphoric acid esters.

3,562,169

DETERGENT COMPOSITIONS CONTAINING OLIGOMERIC ESTER CHAIN CONDENSATES OF ETHANE - 1 - HYDROXY - 1,1 - DIPHOSPHONIC ACID AS BUILDERS

James B. Prentice, Batesville, Ind., assignor to The Procter & Gamble Company, Cincinnati, Ohio, a corporation of Ohio

No Drawing. Filed Dec. 23, 1968, Ser. No. 786,372
Int. Cl. C11d *3/36*
U.S. Cl. 252—152 **5 Claims**

Built detergent compositions containing an organic synthetic detergent and a builder which is an oligomeric ester chain condensate of ethane-1-hydroxy-1,1-diphosphonic acid in a proportion of detergent to builder of 5:1 to about 1:20, by weight.

3,562,170

SURFACE ACTIVE AGENT COMPOSITIONS

Vahan Zorayan, Enghien-les-Bains, and Guy Vanlerberghe, Montjay-la-Tour, France, assignors to L'Oreal, Paris, France

No Drawing. Continuation-in-part of application Ser. No. 525,345, Feb. 7, 1966. This application Jan. 13, 1969, Ser. No. 790,838
Claims priority, application Luxembourg, Mar. 30, 1965, 48,285
Int. Cl. C11d *1/12*
U.S. Cl. 252—152 **10 Claims**

A biodegradable surface active composition that does not irritate the eyes comprising an aqueous solution of a compound having the formula

$$R—CO—NH—(CH_2CH_2O)_2—SO_3M$$

in which R is an alkyl or alkenyl group and M is a cation.

3,562,171

OXYGEN CARRIER FOR DETERGENT COMPOSITIONS

Robert A. Guida, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio, a corporation of Ohio

No Drawing. Filed Dec. 31, 1968, Ser. No. 789,003
Int. Cl. C11d *7/54*
U.S. Cl. 252—186 **10 Claims**

A fast dissolving, nonsegregating oxygen carrier for granular detergents is disclosed, consisting essentially of 4.5% to 59% finely divided peroxyhydrate salt imbedded in 20% to 88% of a water-soluble waxy solid, said waxy solid adhering to 4.5% to 50% of granular borax substrate, said substrate having a bulk density of 0.03 to 0.56 g./cc. and a particle size between 0.074 mm. and 3.36 mm. A process for preparing the oxygen carrier is also disclosed in which the waxy solid is dissolved in a volatile organic solvent, the peroxyhydrate salt is slurried into the solution, and the slurry is sprayed onto a falling curtain of the granular borax.

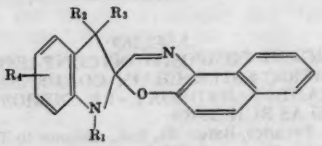
3,562,172

PHOTOCHROMIC COMPOUND AND COMPOSITION CONTAINING THE SAME

Hisatake Ono and Chiaki Osada, Asaka-shi, Japan, assignors to Fuji Photo Film Co. Ltd., Tokyo, Japan

Filed Oct. 28, 1969, Ser. No. 871,872
Claims priority, application Japan, Oct. 28, 1968, 43/78,465
Int. Cl. G02b 5/20
U.S. Cl. 252—300 10 Claims

Photochromic compositions containing, and photochromic compounds per se, represented by the formula:



wherein R_1 represents $—(CH_2)_nCOOH$, $—(CH_2)_nCN$ or $—(CH_2)_nCOOR$ (wherein R is an alkyl group having 1 to 5 carbon atoms; n is 1 to 4); R_2 and R_3 represent an alkyl group having 1 to 5 carbon atoms or a phenyl group; and R_4 represents a hydrogen atom, an alkyl group having 1 to 5 carbon atoms; a halogen atom, a nitro group, a cyano group, or an alkoxyl group having 1 to 5 carbon atoms or a carboxyl group, and said carboxyl group may be substituted with an alkyl group having 1 to 5 carbon atoms.

3,562,173

LASER MATERIALS

Mani L. Bhaumik, Pasadena, and Mustafa A. El-Sayed, Los Angeles, Calif., assignors, by mesne assignments, to Xerox Corporation, a corporation of New York

No Drawing. Filed Oct. 29, 1964, Ser. No. 407,543
Int. Cl. C09k 1/02; F21k 2/00
U.S. Cl. 252—301.2 11 Claims

A liquid laser material including a solution of a rare-earth chelate having a triplet state and a sensitizer compound, that is an aromatic aldehyde or ketone, having a triplet state above the chelate triplet state and adapted for fast, diffusion-controlled energy transfer from it to the rare-earth chelate.

3,562,174

METHOD OF PREPARING A LANTHAMIDE ACTIVATED YTTRIUM, GADOLINIUM, OR LANTHANUM OXYSULFIDE LUMINESCENT MATERIAL

Roelof Egbert Schuil, Emmasingel, Eindhoven, Netherlands, assignor, by mesne assignments, to U.S. Philips Corporation, New York, N.Y., a corporation of Delaware

Filed Mar. 29, 1968, Ser. No. 717,243
Claims priority, application Netherlands, Mar. 31, 1967, 6704591
Int. Cl. C09k 1/14
U.S. Cl. 252—301.4 5 Claims

Prepare europium activated yttrium or lanthanum oxysulfide by heating europium oxide and yttrium oxide and lanthanum oxide in a melt of sodium or potassium thiocyanate.

3,562,175

GADOLINIUM OXIDE PARTICLE GROWTH IN LITHIUM OXIDE FLUX

Robert L. Hickok, Richmond Heights, Ohio, assignor to General Electric Company, a corporation of New York

No Drawing. Filed Sept. 11, 1968, Ser. No. 759,208
Int. Cl. C01f 17/00; C09k 1/10
U.S. Cl. 252—301.4 11 Claims

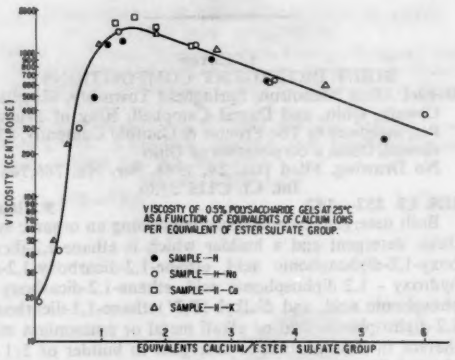
Crystalline particles of gadolinium oxide, such as the phosphor activated with europium can be grown into a size suitable for color television applications and other uses by firing in a flux of lithium oxide at a temperature below about 1200° C. Yttrium oxide can be partially substituted for up to about 50 molar percent of the gadolinium oxide. The initial oxide, such as the phosphor prepared by firing mixed gadolinium and europium oxalates precipitated from the nitrates and being best described as porous aggregates of perhaps 4 microns in diameter in which the individual or primary particles are about 1 micron or less in diameter, can be converted to a mixture of individual or primary particles and highly compact polycrystalline particles of from 4 to 10 microns.

3,562,176

PRODUCTION OF THIXOTROPIC GELS AND COMPOSITION THEREFOR

Dimitri J. Stancioff, Camden, and Richard G. Cash and John Blethen, Rockland, Maine, assignors to Marine Colloids, Inc., Springfield, N.J., a corporation of Delaware

Filed Nov. 28, 1967, Ser. No. 686,115
Int. Cl. B01j 13/00; A01n 17/10; C08k 17/12
U.S. Cl. 252—316 11 Claims


VISCOSITY (CENTIPOISE)
VISCOSITY OF 0.5% POLYSACCHARIDE GELS AT 25°C AS A FUNCTION OF EQUIVALENTS OF CALCIUM IONS PER EQUIVALENT OF ESTER SULFATE GROUP.
SAMPLE—H
SAMPLE—H—Rb
SAMPLE—H—Cs
SAMPLE—H—K
EQUIVALENTS CALCIUM/ESTER SULFATE GROUP

A composition and a method are provided for making an aqueous thixotropic gel reproducibly to substantially optimum predetermined characteristics of static viscosity and thixotropy. The composition consists essentially of (1) a polysaccharide extracted from a marine plant, which polysaccharide contains sulfate groups, (2) a water-soluble compound of sodium or potassium which is a sequestrant for calcium, and (3) a water-soluble compound of calcium which dissolves in water and releases calcium ions at a substantially slower rate than that at which the sequestrant dissolves. The thixotropic gel is useful as a vehicle for dispersed substances.

3,562,177

AMMONIA CONTAINING SILICA-AND-ORGANO-SILICA-AEROGEL THICKENING AGENTS AND THEIR PREPARATION

Harry Teicher and Ralph Marotta, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo., a corporation of Delaware

No Drawing. Original application Dec. 9, 1966, Ser. No. 600,359, now Patent No. 3,455,826, dated July 15, 1969. Divided and this application Jan. 3, 1969, Ser. No. 821,524
Int. Cl. B01j13/00; C09c 3/00
U.S. Cl. 252—316 5 Claims

The present invention provides a novel thickening agent which comprises (a) finely divided particles of an

amorphous, hydrophilic silica aerogel having at least one silanol group per square millimicron of surface area thereof and (b) containing at least 0.10% by weight ammonia, based on the weight of such aerogel, but less than 2.5% by weight ammonia. The ammonia provides a coating on said aerogel by being hydrogen bonded by hydrogen bonding between the silanol group of the aerogel and the nitrogen atom of the ammonia. The process of preparing the above thickening agent comprises the steps of contacting such aerogel with the ammonia for a period of time and under certain pressure and temperature conditions, e.g. 1 p.s.i.g. and 70° C. respectively, until the aerogel is coated, i.e. hydrogen bonded, with ammonia.

3,562,178

COMPLEXES OF V OR N OR Nb CONTAINING NO WITH ORGANOALUMINUMS AS OLEFIN REACTION CATALYSTS

William B. Hughes and Ernest A. Zuech, Bartlesville, Okla., assignors to Phillips Petroleum Company, a corporation of Delaware

No Drawing. Continuation-in-part of application Ser. No. 635,656, May 3, 1967. This application Jan. 2, 1968, Ser. No. 694,875

Int. Cl. C07c *3/62*

U.S. Cl. 252—429 10 Claims

A catalyst active for the olefin reaction including olefin disproportionation comprising a compound of vanadium or niobium complexed with NO and a selected complexing agent (e.g., benzoic acid) and combined with an organoaluminum compound (e.g., methylaluminum sesquichloride).

3,562,179

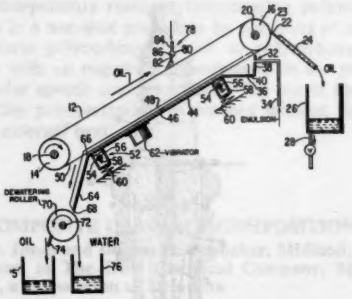
APPARATUS FOR DEWATERING A BITUMINOUS EMULSION

Lubomyr M. O. Cymbalisty, Edmonton, Alberta, Canada, assignor of thirty percent to Cities Service Athabasca, Inc., a corporation of Delaware; thirty percent to Imperial Oil Limited, a corporation of Canada; thirty percent to Atlantic Richfield Corporation, a corporation of Pennsylvania, and ten percent to Royalite Oil Company, Limited, a corporation of Canada

Filed June 17, 1968, Ser. No. 737,730

Int. Cl. B01d *17/00, 19/00*

U.S. Cl. 252—360 6 Claims



The method of the present invention comprises flowing a bituminous emulsion or froth between two closely and uniformly spaced surfaces while periodically varying the distance between the two surfaces, thus imparting shearing energy to the emulsion and thereby coalescing the water contained in the emulsion. The distance between the surfaces is preferably varied by vibrating at least one of the surfaces relative to the other in a direction perpendicular to the planes of the surfaces. The apparatus comprises a longitudinally extending and longitudinally movable flat surface, a longitudinally extending flat surface mounted in opposing uniform spaced relationship to said movable surface, means for feeding the emulsion between the two surfaces and means for periodically varying the gap or distance between the surfaces thereby imparting a shearing energy to the emulsion. More particularly the apparatus comprises an upper pulley rotatably mounted on a horizontal axis at an acute angle above the lower pulley and spaced therefrom, a continuous endless belt mounted on and between the pulleys and driven by one of the pulleys, a flat plate mounted in variable spaced relationship to the endless belt, a means for feeding emulsion or froth into the space between the plate and the belt, and a means for periodically varying the space between the plate and the belt whereby the plate and the moving belt opposite the plate apply controlled shearing and water coalescing action to the emulsion.

3,562,180

METALLIC SALTS OF MIXED ACIDS AS STABILIZERS FOR RIGID VINYL RESIN COMPOSITIONS

Edward L. White, Freehold, and William D. Lang, Rahway, N.J., assignors to National Lead Company, New York, N.Y., a corporation of New Jersey

No Drawing. Filed July 31, 1968, Ser. No. 748,945

Int. Cl. C08f *45/62*

U.S. Cl. 252—400 8 Claims

Lead salts of mixed saturated monocarboxylic aliphatic acids containing from 8 to 14 carbon atoms, lead salts coformed with alkaline earth salts of said mixed acids and process therefor, as stabilizers for rigid vinyl halide resin compositions.

3,562,181

SUPPORTED CATALYSTS FOR DIMERIZATION OF ACRYLONITRILES AND PROCESS OF USING THE SAME

William Joseph Linn and Alvin Barber Stiles, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del., a corporation of Delaware

No Drawing. Filed July 19, 1967, Ser. No. 654,329

Int. Cl. C07c *121/20, 121/30*

U.S. Cl. 252—430 5 Claims

The catalytic efficiency of ruthenium compounds made by the reaction of soluble ruthenium compounds with salts of weak acids in water for the production of dinitriles from acrylonitrile in the presence of hydrogen is enhanced by adsorption of the catalysts on charcoal or γ alumina.

3,562,182

CATALYST WHICH CAN BE USED IN THE POLYMERIZATION OF EPIHALOHYDRINS

Henry L. Hsieh, Bartlesville, Okla., and Francis X. Mueller, Jr., Louisville, Ky., assignors to Phillips Petroleum Company, a corporation of Delaware

No Drawing. Original application Feb. 23, 1968, Ser. No. 707,455, now Patent No. 3,457,197, dated July 22, 1969. Divided and this application Apr. 1, 1969, Ser. No. 812,413

Int. Cl. C08d *1/14*

U.S. Cl. 252—431 2 Claims

A catalyst formed by contacting (a) an organoaluminum compound such as triisobutylaluminum, (b) an organozinc compound such as diethylzinc, (c) a chelating agent such as acetylacetone, and (d) water. This catalyst has been found useful in the polymerization of epihalohydrins and in the copolymerization of epihalohydrins with other oxirane compounds.

3,562,183

METHOD OF OBTAINING VANADIUM-CONTAINING CATALYSTS FOR THE VAPOR-PHASE OXIDATION OF AROMATIC HYDROCARBONS

Alberto Sonz, Milan, Italy, assignor to Aziende Colori Nazionali Affini ACNA S.p.A., Milan, Italy, a corporation of Italy

Filed July 25, 1967, Ser. No. 655,871
Int. Cl. B01j *11/82*
U.S. Cl. 252—440 **1 Claim**

Described is a method for the preparation of catalysts on the basis of vanadium-containing active products, for the oxidation of naphthalene to phthalic anhydride. The process is characterized in that an aqueous solution containing the compounds V_2O_4, SO_3 and K_2O with $V_2O_4/SO_3/K_2O$ molar ratios comprised between 1/6/2 and 1/10/6, is adsorbed at a temperature comprised between 10° and 90° C. onto a natural or artificial porous support. The impregnated support is then subjected to a thermal treatment of calcination in a current of air.

3,562,184

CATALYSTS USEFUL IN POLYMER PRODUCTION

Charles G. Dodd, Sylvania, and Peter Christopher Fletcher, Maumee, Ohio, assignor to Owens-Illinois, Inc., a corporation of Ohio

No Drawing. Filed Jan. 3, 1967, Ser. No. 606,541
Int. Cl. B01j *11/40*
U.S. Cl. 252—455 **7 Claims**

A glass-ceramic catalyst formed by thermal crystallization from a silicate glass composition having dissolved or dispersed therein chromium ions calculated as Cr_2O_3.

3,562,185

OXIDATION CATALYSTS CONTAINING VANADIUM PENTOXIDE AND TITANIUM DIOXIDE

Wilhelm Friedrichsen and Guenter Poehler, Ludwigshafen (Rhine), and Otto Goehre, Wilhelmsfeld, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Dec. 27, 1967, Ser. No. 693,712
Claims priority, application Germany, Jan. 4, 1967, P 16 42 921.3
Int. Cl. B01j *11/06, 11/32*
U.S. Cl. 252—456 **6 Claims**

Catalysts containing vanadium pentoxide and titanium dioxide for the oxidation of aromatic and unsaturated hydrocarbons to carboxylic acids, consisting of an inert non-porous carrier which is coated with a porous composition containing 1 to 15% by weight of vanadium pentoxide and 85 to 99% by weight of titanium dioxide in a layer having a thickness of 0.02 to 2 mm., particularly 0.05 to 1 mm., the catalysts having a content of vanadium pentoxide of 0.05 to 3% by weight and the composition containing vanadium pentoxide and titanium dioxide having been applied in dissolved or suspended form to a carrier which has been heated to a temperature of 160° to 500° C., particularly 270° to 500° C.

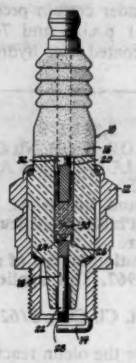
3,562,186

CERAMIC-TO-METAL CONDUCTIVE GLASS SEAL AND SPARK PLUG USING SAME

Patrick N. Kesten and Richard A. Webb, Davison, and William M. Flock, Flint, Mich., assignors to General Motors Corporation, Detroit, Mich., a corporation of Delaware

Continuation-in-part of application Ser. No. 846,728, Aug. 1, 1969. This application Mar. 2, 1970, Ser. No. 15,963
Int. Cl. H01b *1/02;* **H01t** *13/20*
U.S. Cl. 252—513 **10 Claims**

This invention relates to an improved ceramic-to-metal conductive glass seal for ceramic insulators and more particularly to compositions comprising glass, iron, copper, and aluminum which are suited for use in the centerbore of spark plugs. The improved seal of our invention comprises a mixture on a weight basis of about 50–65 parts iron, 1–4 parts copper, 3–5 parts aluminum, and 30–45 parts glass; a preferred embodiment comprises about 56 parts iron, 2 parts copper, 3 parts aluminum,



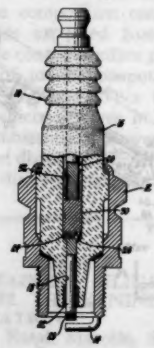
and 39 parts glass. The addition of a filler material such as mullite enables the broadening of the range of our composition to about 35–55 parts iron, 1–4 parts copper, 3–5 parts aluminum and 30–50 parts glass, the filler being present in an amount of about 5–15 parts; a preferred embodiment comprises about 45 parts iron, 2 parts copper, 3 parts aluminum, 40 parts glass and 10 parts mullite.

3,562,187

SPARK PLUG CONDUCTIVE GLASS SEAL

Harold H. Abdella, Davison, Mich., assignor to General Motors Corporation, Detroit, Mich., a corporation of Delaware

Filed June 26, 1968, Ser. No. 740,369
Int. Cl. C03c *3/04;* **H01b** *1/02*
U.S. Cl. 252—513 **5 Claims**



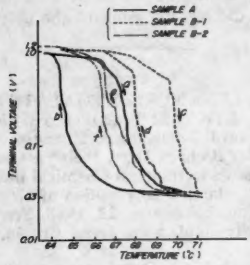
A hermetic ceramic-to-metal conductive glass seal for use in spark plugs and the like containing glass, iron and aluminum is disclosed. A specific glass seal in accordance with this invention is formed from a composition which contains 50 parts by weight glass, 38 parts by weight iron and 4 parts by weight aluminum.

3,562,188

CRITICAL TEMPERATURE RESISTOR DEVICES CONTAINING VANADIUM OXIDE AS A PRINCIPAL CONSTITUENT AND METHOD FOR PREPARING THE SAME

Tomokuni Mitsuishi, Kodaira-shi, Seikichi Akiyama, Kokubunji-shi, Sakichi Ashida, Fuchu-shi, and Hisao Futaki, Musashino-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan, a corporation of Japan

Filed May 15, 1968, Ser. No. 729,288
Claims priority, application Japan, May 17, 1967, 42/30,814
Int. Cl. H01b 1/06
U.S. Cl. 252—518 9 Claims



A critical temperature resistor device contains vanadium oxide as a main constituent and the vanadium oxide consists of fine crystalline particles of VO_2 whose crystal sizes are arranged in a range not exceeding 50μ to improve a hysteresis phenomenon.

3,562,189

PROCESS FOR CELLULAR POLYMERS CONTAINING IMIDE GROUPS

William J. Farrissey, Jr., North Branford, Alexander McLaughlin, Meriden, and James S. Rose, Guilford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich., a corporation of Delaware

No Drawing. Filed June 19, 1967, Ser. No. 647,184
Int. Cl. C08g 22/44, 53/08
U.S. Cl. 260—2.5 11 Claims

High temperature resistant condensation polymers are prepared in a one-shot procedure by admixing at ambient temperatures polycarboxylic acids or polycarboxylic anhydrides with an organic polyisocyanate in the presence of a dipolar aprotic organic solvent. The use of the latter permits the polymerization to proceed without the need to apply external heat.

3,562,190

COMPOSITE CASTABLE COMPOSITION

Giffin D. Jones and Burton D. Brubaker, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich., a corporation of Delaware

No Drawing. Filed Mar. 11, 1968, Ser. No. 711,916
Int. Cl. C08f 47/10; C08j 1/26
U.S. Cl. 260—2.5 11 Claims

A moldable, deformable composition of matter comprising (A) solid foamed clay fragments which have closed cell interiors and broken or open cell exteriors intermixed with (B) a settable liquid resin and (C) a liquid readily convertible to a gas at a moderate increase in temperature which composition autogenously sets to a shaped cellular light-weight insulating material and the use of such material to provide thermal insulation.

3,562,191

PLASTISOL COMPOSITION

Donald A. Giessler, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind., a corporation of Indiana

No Drawing. Continuation of application Ser. No. 378,995, June 29, 1964. This application June 11, 1968, Ser. No. 744,598
Int. Cl. C08f 47/10; C08v 1/20
U.S. Cl. 260—2.5 5 Claims

Closure having as the sealing portion thereof a solvent resistant, cellular plastisol gasket formed from a vinyl polymer, a phenolformaldehyde resin, a filler, at least one plasticizer, and a blowing agent, and said gasket composition which is bondable directly to metal surfaces.

3,562,192

INTERPOLYMER OF 2,3-DICHLORO-1,3-BUTADIENE AND BLENDS THEREOF WITH CHLORINATED RUBBER

Wendell R. Conard, Kent, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio, a corporation of Ohio

No Drawing. Filed May 8, 1968, Ser. No. 727,701
Int. Cl. C08d 9/16
U.S. Cl. 260—3.5 16 Claims

The product described herein comprises a terpolymer of 2,3-dichloro-1,3-butadiene, acrylonitrile and a third comonomer selected from chlorostyrene, α-methylstyrene and ethyl acrylate. Copolymers of dichlorobutadiene with either acrylonitrile or chlorostyrene are known. However, while these have good adhesive properties, they do not have the desired solubility properties, and they must be degelled and require heating prior to application. In contrast the terpolymers of this invention have improved solubility and can be applied "cold," that is without prior heating.

3,562,193

COMPOSITION CONTAINING POLYMER LATEX, AROMATIC OIL, CURED ELASTOMERIC AGGREGATES AND CURING AGENTS

Robert Ernest Leeks, Reading, and Alfred John Demers, Peabody, Mass., assignors to Borden, Inc., New York, N.Y., a corporation of New Jersey

Filed Nov. 25, 1966, Ser. No. 597,059
Int. Cl. C08d 9/04, 9/16
U.S. Cl. 260—4 5 Claims

This invention relates to the method of and composition produced by the steps of admixing a polymer latex elastomeric when cured, with an emulsified highly aromatic oil which is compatible with said polymer latex, and aggregates described, combining with said binder cured elastomeric aggregates having an average particle size less than about one inch in its greatest dimension and a curring agent for said polymer latex.

3,562,194

OIL-MODIFIED ALKYD RESIN THIXOTROPIC PAINT AND PROCESS FOR THE PREPARATION THEREOF

Wilhelm Offermann, Dusseldorf, and Heinz Linden and Jurgen Plapper, Dusseldorf-Holthausen, Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany, a corporation of Germany

No Drawing. Filed Feb. 17, 1969, Ser. No. 799,980
Claims priority, application Germany, Feb. 17, 1968, P 16 44 836.5
Int. Cl. C09d 3/64, 5/04
U.S. Cl. 260—22 13 Claims

Thixotropic oil-based paint containing from 0.1 to 3% by weight, based on the finished paint, of an additive which is a salt of a reaction product of a polyvalent inorganic acid such as sulfuric, phosphoric, or boric, and an ester defined as follows:

(a) an ester of low epoxide oxygen content of an unsaturated aliphatic carboxylic fatty acid and a saturated alcohol, or
(b) an ester of low epoxide content of an unsaturated fatty alcohol and a carboxylic acid.

The process for preparation of the thixotropic paint is accomplished by admixing the additive with an oil-based paint.

3,562,195
FLUORIDE ELASTOMER COMPOSITION
Philip J. Reiner, Woodland Hills, and Orville F. Markles, Jr., Hawthorne, Calif., assignors to North American Rockwell Corporation
No Drawing. Filed Dec. 4, 1967, Ser. No. 687,429
Int. Cl. C08f *29/22, 37/16*
U.S. Cl. 260—23.5 **10 Claims**

A novel elastomeric composition of matter wherein said composition comprises a copolymer of vinylidene fluoride and hexafluoropropylene and a terpolymer of ethylene and propylene.

3,562,196
OLEFIN POLYMER DISPERSION PREPARATION USING OILS AND WAXES AS ANTIFOAMS
Thomas Charles Bissot, Grand Island, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del., a corporation of Delaware
No Drawing. Filed July 11, 1968, Ser. No. 743,959
Int. Cl. B01b *1/02;* **C08f** *47/16*
U.S. Cl. 260—23 **5 Claims**

An improved process for the preparation of olefin polymer dispersions, such as ethylene/vinyl acetate copolymer dispersions, is provided. The improvement comprises adding vegetable oils or refined solid or liquid hydrocarbons derived from petroleum such as paraffin waxes or light and heavy mineral oils to suppress foam at a specific time during solvent evaporation.

3,562,197
WATER-INSOLUBLE AMMONIUM POLYPHOSPHATES AS FIRE-RETARDANT ADDITIVES
Paul G. Sears, Lexington, Ky., and Howard L. Vandersall, Ballwin, Mo., assignors to Monsanto Company, St. Louis, Mo., a corporation of Delaware
No Drawing. Continuation-in-part of application Ser. No. 514,657, Dec. 17, 1965, which is a continuation-in-part of application Ser. No. 301,918, Aug. 13, 1963. This application Jan. 26, 1968, Ser. No. 700,753
Int. Cl. C08c *11/70;* **C09d** *5/18;* **C09k** *3/28*
U.S. Cl. 260—28.5 **10 Claims**

Improved intumescing coating compositions are prepared by the use of a substantially water-insoluble ammonium polyphosphate having the formula

$$H_{(n-m)+2}(NH_4)_mP_nO_{3n+1}$$

wherein n is an integer having an average value greater than 10 and m/n has an average value between about 0.7 and about 1.1.

3,562,198
EPOXIDE RESIN SOLUTION
Robert J. Slocombe, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo., a corporation of Delaware
No Drawing. Filed Oct. 26, 1967, Ser. No. 678,181
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 **5 Claims**

A solution, in an inert, organic liquid solvent, comprising an epoxide resin which has been partially cured by a hydrocarbon amine curing agent; the method of preparing the partially cured resin in a liquid media; and the method of preparing moldable grains comprising filler particles enveloped by the partially cured resin which comprises mixing the solution with the particles, treating the mixture with a liquid which is miscible with the solvent of said solution and is a non-solvent for the partially cured resin, and recovering the grains.

3,562,199
ANNEALING OF ARYLENE SULFIDE POLYMERS
Harold Wayne Hill, Jr., and James T. Edmonds, Jr., Bartlesville, Okla., assignors to Phillips Petroleum Company, a corporation of Delaware
No Drawing. Continuation-in-part of application Ser. No. 492,333, Oct. 1, 1965, which is a continuation-in-part of application Ser. No. 327,143, Nov. 27, 1963. This application Feb. 6, 1969, Ser. No. 797,267
Int. Cl. C08g *23/00, 51/04*
U.S. Cl. 260—37 **23 Claims**

The physical properties of shaped bodies of arylene sulfide polymers are improved by annealing at a temperature below the melting point of the polymer.

3,562,200
POLYETHYLENE TEREPHTHALATE CONTAINING ETHYLENE COPOLYMERS
Michael Edward Benet Jones, Runcorn, and Eric Nield and Charles Richard Hart, Welwyn Garden City, England, assignors to Imperial Chemical Industries Limited, London, England, a corporation of Great Britain
No Drawing. Filed Aug. 22, 1968, Ser. No. 754,741
Claims priority, application Great Britain, Aug. 29, 1967, 39,484/67
Int. Cl. C08g *39/10, 51/04*
U.S. Cl. 260—40 **16 Claims**

Thick walled-shaped articles of crystallised poly(ethylene terephthalate) containing finely dispersed discrete particles of a rubbery copolymer of ethylene and an ethylenically unsaturated ester, e.g., an alkyl acrylate, hydroxyalkyl acrylate or vinyl alkanoate; compositions suitable for conversion to these shaped articles and methods of producing the shaped articles from the compositions.

3,562,201
UNSATURATED POLYESTER RESIN/MONOMER MOULDING COMPOSITIONS
Alan Crowe and David Philip Fry, Cardiff, Glamorgan, Wales, assignors to British Resin Products Limited, London, England
No Drawing. Filed Mar. 12, 1969, Ser. No. 806,741
Claims priority, application Great Britain, Mar. 19, 1968, 13,163/68
Int. Cl. C08g *51/04*
U.S. Cl. 260—40 **6 Claims**

A process for the preparation of moulded articles by means of extrusion or injection moulding a free flowing unsaturated polyester resin/monomer composition, wherein the composition comprises an unsaturated polyester, a copolymerisable monomer and a primary absorbent filler which releases the absorbed unsaturated polyester resin/monomer system under pressure and/or shear during the injection or extrusion moulding process.

3,562,202
CURING AN ALPHA-OLEFIN POLYMER WITH A QUINONE DIOXIME AND A ZINC SALT
Donald B. Smith, Reading, and James C. MacKenzie, Wellesley Hills, Mass., assignors, by mesne assignments, to Polymer Dispersions, Inc., New York, N.Y., a corporation of Ohio
No Drawing. Continuation-in-part of applications Ser. No. 767,776, Oct. 17, 1958, and Ser. No. 812,595, May 12, 1959. This application Dec. 26, 1962, Ser. No. 247,346
Int. Cl. C08f *1/84, 45/04*
U.S. Cl. 260—41 **21 Claims**

1. A process for improving the high temperature properties of a polymeric material chosen from the group consisting of the homo-polymers of the aliphatic monoolefinic hydrocarbon monomers and mixtures thereof, co-

polymers formed from the aliphatic mono-olefinic hydrocarbons, and mixtures thereof, so as to produce a material having exceptional flexibility and strength, which process comprises compounding said polymeric material with a curing agent comprising between about 0.1 and 25% by weight of said polymeric material of a zinc salt chosen from the group consisting of zinc salts of carboxylic acids and zinc salts of inorganic acids, and above about 0.1% by weight of said polymeric material of a compound having the formulation

$$R(NOR_1)_2$$

wherein R is an organic group having a quinoid structure, and R_1 is chosen from the group consisting of hydrogen, a metal which permits curing activity by said compound upon heating, and an organic grouping chosen from the group consisting of alkyl, aryl, arylalkyl, acyl, or aroyl, and curing the resulting mixture at a temperature above about 160° C.

3,562,203

STYRENE RESINS OF CONTROLLED PROPERTIES

Louis Grunin, Spring Valley, and George B. Duhnkrack and William P. Kinneman, Jr., Suffern, N.Y., and Phillip Gilbert, Fairfield, N.J., assignors to Koppers Company, Inc., a corporation of Delaware

No Drawing. Original application Oct. 5, 1966, Ser. No. 584,382, now Patent No. 3,493,636, dated Feb. 3, 1970. Divided and this application Sept. 10, 1969, Ser. No. 856,812

Int. Cl. C08f *45/04*

U.S. Cl. 260—41 **2 Claims**

Lustrous pearlized sheets for use in button blank manufacture are made from a styrene-divinylbenzene copolymer formed by a prepolymer syrup having a latent gel structure. Pearlized pigment particles are added to the pre-polymer syrup and subjected to movement in order to effect systematic orientation of the particles.

3,562,204

THERMOPLASTIC ELASTOMERIC COMPOSITION COMPRISING BLOCK COPOLYMERS AND RANDOM COPOLYMERS

Adriaan W. van Breen, Delft, Netherlands, assignor to Shell Oil Company, New York, N.Y., a corporation of Delaware

No Drawing. Filed Dec. 22, 1966, Ser. No. 603,723

Claims priority, application Netherlands, Feb. 11, 1966, 6601741

Int. Cl. C08f *19/08, 33/08*

U.S. Cl. 260—41.5 **6 Claims**

New compositions having increased hardness and stiffness comprise 100 parts by weight of block copolymers of monovinyl arenes and conjugated dienes, and 2–200 parts by weight of random copolymers of the same monomer types containing 50–90% condensed monovinyl arene content.

3,562,205

COATING COMPOSITION FOR ADHERING SYNTHETIC RESINS TO METAL SUBSTRATES

Douglas S. Richart, Reading, Pa., assignor to The Polymer Corporation, Reading, Pa., a corporation of Pennsylvania

Continuation-in-part of application Ser. No. 539,803, Apr. 4, 1966. This application May 12, 1969, Ser. No. 823,595

Int. Cl. C08f *29/18*; C08g *41/02*

U.S. Cl. 260—41 **7 Claims**

A coating composition consisting essentially of polyvinyl chloride or polyamides; finely divided metals, metal oxides or metal salts and finely divided non-film forming nitrogen-containing organic compounds in which the compound has at least two nitrogen atoms or the nitrogen atom is linked to another atom of the compound by a multiple bond with the nitrogen compound evolving less than about 20 milliliters of gas per gram at the fusion temperature of the resin. The composition is applied to metals and then heated to form a protective coating without the need for a primer.

3,562,206

PROCESS FOR PRODUCING ULTRAHIGH MOLECULAR WEIGHT POLYAMIDES

Bernard Silverman, Raleigh, N.C., and Leslie E. Stewart, Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo., a corporation of Delaware

No Drawing. Filed Dec. 15, 1967, Ser. No. 690,781

Int. Cl. C08f *45/56*; C08g *20/20*

U.S. Cl. 260—45.7 **3 Claims**

Linear polyamides having an $[\eta]$ above 3.5 and a viscosity average molecular weight above 100,000 are provided. These polyamides are especially useful as molding resins. They are produced by a method of solid state polymerization, i.e., heating lower molecular weight polymer having an amine to carboxyl end ratio of at least 1.1 at a temperature of between 130° C. and 200° C., in the absence of oxygen.

3,562,207

POLYMERIC MATERIALS CONTAINING CAGED BORON-NITROGEN COMPOUNDS

Jerome H. Ludwig, Cleveland, and Kenneth J. Witsken, Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio, a corporation of Ohio

No Drawing. Filed Feb. 23, 1968, Ser. No. 707,414

Int. Cl. C08f *45/60*; C08g *51/60*; C09k *3/16*

U.S. Cl. 260—45.8 **15 Claims**

Polymeric materials treated with caged boron-nitrogen containing compounds are provided, along with a method for imparting improved properties to polymeric materials by treating them with caged boron-nitrogen containing compounds. The caged boron-nitrogen containing compounds are incorporated in or used to treat the surface of polyvinyl chloride, polyethylene, vinyl chloride-vinyl acetate copolymers, polyethylene terephthalate and the like. Examples of caged compounds used in this invention are 3,7,10-trimethyl-2,8,9-trioxa-5-aza-1-boratricyclo [3.3.3.0] undecane; 3 - hydroxymethyl - 7,10-dimethyl-2,8,9-trioxa-5 - aza - 1 - boratricyclo [3.3.3.0] undecane stearate; and 4,4,7,10-tetramethyl-2,8,9-trioxa-5-aza-1-boratricyclo [3.3.3.0] undecane.

3,562,208

ADDITIVES FOR REDUCING THE INFLAMMABILITY OF HIGH ORGANIC POLYMERS

Hans-Joachim Kötzsch, Rheinfelden, and Egon Bierwirth, Oberlar, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany, a corporation of Germany

No Drawing. Filed June 18, 1968, Ser. No. 737,867

Claims priority, application Germany, June 30, 1967, D 53,484

Int. Cl. C08c *27/64*; C08d *11/64*; C08f *45/62*

U.S. Cl. 260—45.75 **5 Claims**

Flame retardants for incorporation into high organic polymers comprising products obtained by a Diels-Alder synthesis from hexachlorocyclopentadiene and a vinyl, allyl or methallyl ester or the corresponding mixed esters of bivalent to tetravalent carboxylic acids and the resultant improved polymer products.

3,562,209
ALPHA-OLEFIN POLYMERS CONTAINING POLYESTER STABILIZERS

Richard D. Cassar, West Chester, Pa., and Jackson S. Boyer, Claymont, Del., assignors to Sun Oil Company, Philadelphia, Pa., a corporation of New Jersey

No Drawing. Filed Mar. 10, 1969, Ser. No. 805,835
Int. Cl. C08f *45/58*
U.S. Cl. 260—45.85 **14 Claims**

A solid substantially crystalline alpha-monoolefin polymer composition having improved resistance to ultraviolet degradation comprising a solid crystalline alpha-monoolefin polymer containing a polyester of a polymethylated muconic acid selected from the group consisting of α,β'-dimethylmuconic acid, α,α'-dimethylmuconic acid, α,α',β-trimethylmuconic acid, α,β,β'-trimethylmuconic acid, $\alpha,\alpha',\beta,\beta'$-tetramethylmuconic acid and mixtures thereof with a polyethylene glycol of a molecular weight in the range of 100 to 1000, said polyester having a molecular weight in the range of 600 to 20,000.

3,562,210
ELASTOMERIC COMPOSITION CONTAINING PHOSPHITE ESTER AND POLYESTER STABILIZERS

Richard D. Cassar, West Chester, Pa., and Jackson S. Boyer, Northridge, Del., assignors to Sun Oil Company, Philadelphia, Pa., a corporation of New Jersey

No Drawing. Filed Mar. 10, 1969, Ser. No. 805,871
Int. Cl. C08f *45/58*
U.S. Cl. 260—45.85 **7 Claims**

An elastomer composition having improved resistance to ultraviolet initiated discoloration comprising an elastomer containing 0.5 to 10.0 parts by weight per 100 parts of elastomer of a synergistic mixture of certain aryl and alkaryl phosphite esters with a polyester of a polymethylated muconic acid selected from the group consisting of α,β'-dimethylmuconic acid, α,α'-dimethylmuconic acid, α,α',β-trimethylmuconic acid, α,β,β'-trimethylmuconic acid, $\alpha,\alpha',\beta,\beta'$-tetramethylmuconic acid and mixtures thereof with a polyethylene glycol of a molecular weight in the range of 100 to 1000, said polyester having a molecular weight in the range of 600 to 20,000.

3,562,211
PLASTIC SURFACE COVERINGS OF IMPROVED ULTRAVIOLET LIGHT STABILITY

Richard D. Cassar, West Chester, Pa., and Jackson S. Boyer, Northridge, Del., assignors to Sun Oil Company, Philadelphia, Pa., a corporation of New Jersey

No Drawing. Filed Mar. 10, 1969, Ser. No. 805,872
Int. Cl. C08f *45/58*
U.S. Cl. 260—45.85 **14 Claims**

Plastic surface covering compositions having improved ultraviolet stability comprising a plasticized solid vinyl chloride polymer resin containing an ultraviolet stability improving quantity of a polyester of a polymethylated muconic acid selected from the group consisting of the cis-cis, cis-trans, or trans-trans isomers of α,α'-dimethylmuconic acid, α,β'-dimethylmuconic acid, α,α',β-trimethylmuconic acid, α,β,β'-trimethylmuconic acid, $\alpha,\alpha',\beta,\beta'$-tetramethylmuconic acid and mixtures thereof with a polyethylene glycol of a molecular weight in the range of 100 to 1000, said polyester having a molecular weight in the range of 600 to 20,000.

3,562,212
RANDOM POLY-m-CARBORANYLENESILOXANE COPOLYMERS

Santad Kongpricha, Joliet, Ill., and Hansjuergen A. Schroeder and Stelvio Papetti, Hamden, Conn., assignors to Olin Corporation, a corporation of Virginia

No Drawing. Filed June 19, 1969, Ser. No. 834,896
Int. Cl. C08f *11/04*
U.S. Cl. 260—46.5 **8 Claims**

Random poly - m - carboranylenesiloxane copolymers having pendant trifluoropropyl and hydroxyl moieties are provided by reacting a 1,7-bis[alkoxyalkyl(or aryl)trifluoropropylsilyl]-m-carborane with a selected trichlorosilane and a dichlorosilane in the presence of a reaction catalyst to produce a copolymer having pendant chlorine atoms and subsequently hydrolyzing the aforementioned copolymer to yield the desired product. These random poly - m - carboranylenesiloxane copolymers containing pendant trifluoropropyl and hydroxyl moieties are mixed with fillers, antioxidants, catalysts and cross-linking agents and cured at room temperature to provide compositions useful as thermoresistant and solvent resistant seals, gaskets, etc.

3,562,213
LATENT CURE ACCELERATION OF EPOXY RESINS USING IMIDAZOLE SALTS OF HYDROXY POLYCARBOXYLIC ACIDS

Michael J. Collis, Teddington, England, assignor to Shell Oil Company, New York, N.Y., a corporation of Delaware

No Drawing. Filed May 8, 1968, Ser. No. 727,679
Claims priority, application Great Britain, May 8, 1967, 21,212
Int. Cl. C08g *17/017*
U.S. Cl. 260—47 **7 Claims**

Room temperature-stable epoxy resin mixtures are disclosed. These mixtures comprise a polyepoxide, a polycarboxylic acid anhydride and a curing catalyst which is a salt of an imidazole compound and an organic hydroxy polycarboxylic acid containing at least one asymmetric carbon atom. A process for preparing resinified products from such mixtures is also disclosed.

3,562,214
RESINS BASED ON AROMATIC CYANIC ACID ESTERS AND POLYEPOXIDE COMPOUNDS

Rolf Kubens, Leverkusen, Heinz Schultheis, Cologne-Stammheim, Rudolf Wolf, Dusseldorf, Ernst Grigat and Hans-Dieter Schminke, Cologne-Stammheim, and Rolf Putter, Dusseldorf, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany, a German corporation

No Drawing. Filed May 8, 1968, Ser. No. 727,695
Claims priority, application Germany, June 1, 1967, F 52,573
Int. Cl. C08g *30/14*
U.S. Cl. 260—47 **6 Claims**

Synthetic resins based on aromatic cyanic acid esters having at least two cyanic acid ester groups per molecule and polyepoxides and process for producing the same.

3,562,215
LOW TEMPERATURE, LATENT EPOXY RESIN CURING SYSTEM

Neal E. Moore, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn., a corporation of Delaware

No Drawing. Filed June 9, 1967, Ser. No. 644,797
Int. Cl. C08g *30/14*
U.S. Cl. 260—47 **6 Claims**

A multicomponent curing system stable in the presence of epoxy resin under normal shelf conditions and capable of curing the resin at acceptable rates by in situ generation of curing agents below about 200° F. including a room temperature stable compound decomposable to form an amine having at least one active hydrogen atom, such as 3-phenyl-1,1-dimethyl urea, an OH containing organic compound, such as ethylene glycol. and an organo lead or organo mercury compound, such as lead octoate or phenyl mercuric hydroxide.

3,562,216

PROCESS OF MANUFACTURE OF POLYETHER UREAS AND THIOUREAS PREPARED BY REACTING HEMIFORMALS OF POLYVALENT ALCOHOLS WITH UREA OR THIOUREA

Hans von Portatius, Marl, Germany, assignor to Chemische Werke Hüls Aktiengesellschaft, Marl, Germany, a corporation of Germany

No Drawing. Filed July 13, 1965, Ser. No. 471,761
Claims priority, application Germany, July 24, 1964, C 33,485
Int. Cl. C08g *9/10, 9/34*
U.S. Cl. 260—51.5 30 Claims

Polyether urea and thioureau condensation products produced by the action of hemiformals of polyvalent alcohols, possibly in mixtures with hemiformals of monovalent alcohols, with urea and/or thioruea, and in the presence of acid or basic catalyst.

3,562,217

CROSSLINKED AROMATIC AMIDE-IMIDE POLYMERS FOR HIGH TEMPERATURE RESISTANT WIRE ENAMELS

Edmund J. Zalewski and John L. Simonian, Schenectady, N.Y., assignors to Schenectady Chemicals, Inc., Schenectady, N.Y., a corporation of New York

No Drawing. Filed May 31, 1968, Ser. No. 733,273
Int. Cl. C08g *20/32*
U.S. Cl. 260—63 24 Claims

Cross-linked aromatic-amide-imide polymers are prepared by reacting trimellitic anhydride, trimesic acid and an aromatic diisocyanate, preferably diphenylmethane diisocyanate. Preferably there is added terephthalic acid and/or pyromellitic dianhydride or benzophenone dianhydride. The products are useful as wire enamels giving good appearance with heavy builds on the wire and exceptionally high cut-through temperatures.

3,562,218

COPOLYMERS OF ACETYLENIC ACRYLATES AND METHACRYLATES

Gaetano F. D'Alelio, South Bend, Ind., assignor to Geigy Chemical Corporation, Ardsley, N.Y., a corporation of New York

No Drawing. Filed June 28, 1968, Ser. No. 740,973
Int. Cl. C08f *15/18*
U.S. Cl. 260—67 13 Claims

The copolymers disclosed herein are of acetylenic acrylates and methacrylates having the formula $CH_2{=}C(R)COO{-}Z{-}C{\equiv}CH$ wherein R represents hydrogen or methyl and Z represents a divalent hydrocarbon radical of at least 2 carbon atoms. Polymerization of the acetylenic acrylates and methacrylates in free radical polymerizations generally result in crosslinked or gelled products since the free radicals will activate polymerization through the acetylenic as well as through the acrylic unsaturation. Therefore the copolymers are advantageously prepared by anionic polymerization. The comonomers are those which are copolymerizable with acrylates and methacrylates in anionic polymerizations. Typical comonomers are styrene, its homologs and derivatives, monounsaturated acrylates and methacrylates, acrylonitrile, vinyl esters, vinyl chloride, vinylidene chloride, monoalphaolefins, etc. The copolymers are particularly valuable for post-treatment and postreactions, such as bromination, decaboronation, thermal and radical crosslinking, Mannich reaction with an aldehyde and ammonia or a mono- or di-substituted amine, or reactions with nitrile oxides, aldehydes, ketones, epoxides, sodamide, etc. The copolymers can be tailored to give ultimate properties according to the type and the proportion of comonomers and the proportion of acetylenic groups as well as the type of postreactant or post-treatment.

3,562,219

PROCESS FOR THE PREPARATION OF A POLYESTERIMIDE RESIN

Karl Schmidt, Hofweg 45, Hamburg, Germany, and Dietrich Wille, Minsbekweg 20, Hamburg-Poppenbuttel, Germany

No Drawing. Filed Oct. 5, 1966, Ser. No. 584,329
Claims priority, application Germany, Oct. 9, 1965, B 84,039
Int. Cl. G08g *20/30, 41/00*
U.S. Cl. 260—76 11 Claims

A process for the preparation of a polyesterimide resin comprising the steps of reacting at least one polybasic carboxylic acid or a reactive derivative thereof with at least one polyhydric alcohol and at least one primary amine or reactive derivative thereof to form a polycondensation product containing, in addition to ester groups, at least one five-membered imide ring. The number of primary amino groups employed is in excess of the primary amino groups bound in the cyclic imide group or groups, and/or at least one polyfunctional compound containing secondary amino groups is present in the reaction mixture. The process is characterized in that the reaction between the resin-forming components is carried out in the presence of at least 0.3% by weight of at least one conventional esterification catalyst, calculated on the weight of the resin produced.

3,562,220

BASE-MODIFIED AROMATIC POLYAMIDES

Carl K. McMillin, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del., a corporation of Delaware

No Drawing. Filed Dec. 15, 1967, Ser. No. 690,785
Int. Cl. C08g *20/00*
U.S. Cl. 260—78 2 Claims

Composition comprising an aromatic polyamide modified by the presence of tertiary amino or quaternary ammonium groups wherein the tertiary amino or quaternary ammonium groups are present as divalent repeat units co-condensed with divalent aromatic amide radicals or as an amide compound containing at least three aromatic rings said compound being in admixture with the aromatic polyamide. Such a composition is dyeable with acid dyes and is especially suitable for use in the form of fibers from which dyed fabrics having high temperature resistance can be made.

3,562,221

ACCELERATING ANIONIC POLYMERIZATION OF LACTAMS

Adolf Steinhofer, Helmut Doerfel, and Georg Falkenstein, Ludwigshafen (Rhine), and Wolfgang-Dieter Jeserich, Lambsheim, Pfalz, Germany, assignors to Badische Analin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Jan. 15, 1968, Ser. No. 697,612
Claims priority, application Germany, Jan. 19, 1967, P 17 20 261.8
Int. Cl. C08g *20/00*
U.S. Cl. 260—78 7 Claims

A process for accelerating anionic polymerization of lactams in the presence of alkaline polymerization catalysts and activators at from 80° to 200° C. in the presence or absence of inert solvents, in which N-(N',N'-diphenylcarbamoyl)-lactams having four to thirteen members in the lactam ring are used as activators.

3,562,222
COPOLYAMIDES OF 5-t-BUTYLISOPHTHALIC ACID

James S. Ridgway, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo., a corporation of Delaware

No Drawing. Continuation-in-part of application Ser. No. 458,482, May 24, 1965. This application June 11, 1968, Ser. No. 736,022
The portion of the term of the patent subsequent to May 14, 1985, has been disclaimed
Int. Cl. C08g *20/00*
U.S. Cl. 260—78 5 Claims

High shrinkage polymers useful in production of hosiery and crimpy conjugate yarns are provided by linear random copolyamides of (A) at least one aliphatic diamine having the formula $NH_2(CH_2)_nNH_2$ in which n is an integer from 2 to 10, (B) at least one aliphatic dicarboxylic acid having the formula $HOOC(CH_2)_mCOOH$ in which m is an integer from 4 to 20 and (C) 5-t-butylisophthalic acid. Even greater shrinkage results when a portion of the aliphatic diamine component (A) is replaced with 1,4-cyclohexanebis(methylamine). Fibers made from the novel copolyamides are also useful for tire reinforcement due to their low flatspotting tendency over wide ranges of temperature and humidity.

3,562,223
CROSS-LINKED RESINS

Michel Bargain, Lyon, Andre Combet, Rhone, and Pierre Grosjean, Sainte-Foye-les-Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France, a French body corporate

No Drawing. Filed July 8, 1968, Ser. No. 743,025
Claims priority, application France, July 13, 1967, 114,381
Int. Cl. C08g *20/00*
U.S. Cl. 260—78 5 Claims

Cross-linked resins of good thermal stability useful inter alia for making multicellular materials, for bonding metals, and for making laminates and moulded articles are made by reacting, e.g. by heating together, an unsaturated bis-imide with a diprimary diamine in a ratio of 1.2:1 to 50:1.

3,562,224
POLYAMIDE POLYMERIZATION PROCESS

Rajindar K. Kochhar, Overland Park, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa., a corporation of Delaware

No Drawing. Continuation-in-part of application Ser. No. 610,016, Jan. 18, 1967. This application Aug. 7, 1969, Ser. No. 848,341
Int. Cl. C08g *20/14*
U.S. Cl. 260—78 8 Claims

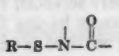
Lactams having at least 7 ring members are polymerized in the presence of water and carbon dioxide.

3,562,225
METHOD OF INHIBITING PREMATURE VULCANIZATION OF DIENE RUBBERS WITH BIS-THIOIMIDES

Aubert Yaucher Coran, Creve Coeur, Mo., and Joseph Edward Kerwood, St. Albans, W. Va., assignors to Monsanto Company, St. Louis, Mo., a corporation of Delaware

No Drawing. Continuation-in-part of applications Ser. No. 459,466, May 27, 1965; Ser. No. 549,730, May 12, 1966; and Ser. No. 579,493, Sept. 15, 1966, now abandoned in view of continuation-in-part application Ser. No. 714,445, Mar. 20, 1968; and continuation of application Ser. No. 646,202, June 15, 1967. This application Jan. 15, 1968, Ser. No. 697,615
Int. Cl. C08f *27/06*
U.S. Cl. 260—79.5 10 Claims

New compounds with a nucleus of



where the dangling valence on the nitrogen is linked to a second carbonyl and R is alkyl, aryl, or cycloalkyl are inhibitors of premature vulcanization of diene rubbers. The R may be substituted to give a bis-sulfenimide of the formula R′—S—R—S—R′ where R is an alkane, arylene, or cycloalkane and R′ is an imide. A combination of a vulcanization accelerator and an inhibitor of this invention is an improved rubber additive which allows longer and safer processing time for rubber.

3,562,226
FRICTION REDUCING

Owen C. Gayley, Coraopolis, M. Frederick Hoover, Bethel Park, and Leonard J. Persinski, Pittsburgh, Pa., assignors, by mesne assignments, to Calgon Corporation, a corporation of Delaware

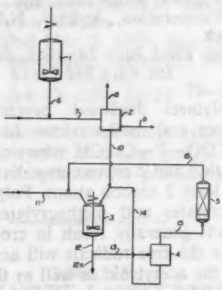
No Drawing. Continuation of abandoned application Ser. No. 595,620, Nov. 21, 1966. This application Aug. 13, 1969, Ser. No. 854,016
Int. Cl. C08f *15/00, 15/40*
U.S. Cl. 260—80.3 5 Claims

Reduction of friction loss in oil well fracturing is accomplished through the addition of small amounts of copolymers of acrylamide and dimethyl diallyl ammonium chloride or other diallyl ammonium compounds, with and without crosslinking by N, N′ methylene bisacrylamide.

3,562,227
PROCESS FOR SEPARATING POLYMERIZATION SOLVENT MEDIA FROM ELASTOMERIC POLYMER

Giovanni di Drusco, Bologna, and Paolo Galli, Ferrara, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed Dec. 23, 1966, Ser. No. 604,345
Claims priority, application Italy, Dec. 30, 1965, 29,170/65
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.78 1 Claim



Process for separating and recovering liquid polymerization medium from elastomeric polymers produced therein comprising, in sequence, (a) first contacting the polymer solution or suspension with a liquid which is a nonsolvent for the polymer to effect initial phase separation between the polymer and the polymerization medium; (b) second, extracting residual medium from the polymer by contacting it with a liquid which is a nonsolvent for the polymer but a solvent for the medium; (c) third, separating the polymer from the liquid phase, as by centrifuging, and recycling said polymer to the second step (b) until the desired residual content of medium in the polymer is obtained; and (d) passing the liquid phase from step (c) through an adsorption column

to separate the medium from the extracting liquid by selective adsorption and recycling the thus regenerated extraction liquid for further use in said extraction step (b).

3,562,228

COPOLYMERIZATION OF OLEFINS

Demetreos N. Matthews, Pequannock, and Frederick C. Loveless, Oakland, N.J., and Robert J. Kelly, Columbia, S.C., assignors to Uniroyal, Inc., New York, N.Y., a corporation of New Jersey

No Drawing. Filed Mar. 25, 1968, Ser. No. 715,569

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.78 **10 Claims**

EPM or EPDM is made in improved yield in inert hydrocarbon solvent medium with a four-component catalyst system:

(a) vanadium oxytrichloride
(b) alkylaluminum sesquichloride
(c) 2-nitropropane or beta-methylanthraquinone, and
(d) an acid-scavenger which is an organic Lewis base containing a hetero atom (N, O, S, Se or Te), e.g. di-n-butylamine, ethyl acetate, acetone, etc.

component (c) serves as an activator for spent or dying catalyst and component (d), the acid acceptor, increases or prolongs the effectiveness of the activator.

3,562,229

PROCESS FOR THE PREPARATION OF COPOLYMERS FROM ETHYLENE AND VINYL ESTERS

Johann Bauer, Gerhard Beier, and Eduard Bergmeister, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany, a corporation of Germany

No Drawing. Filed Oct. 18, 1968, Ser. No. 768,876

Claims priority, application Germany, Oct. 23, 1967, P 17 45 565.1

Int. Cl. C08f *1/13, 1/62, 15/40*

U.S. Cl. 260—80.81 **3 Claims**

This invention relates to a process for the preparation of copolymerizates from ethylene and vinyl esters and possibly other olefinically unsaturated organic compounds in an aqueous emulsion utilizing a redox polymerization catalyst system comprising inorganic and/or organic per-compounds, hydrogen and a colloidally dispersed noble metal of the VIII subgroup of the periodic table wherein the polymerization is conducted at pressures under 100 atmospheres and said vinyl ester is a vinyl ester of a branched chain monocarboxylic acid having at least 9 carbon atoms and is employed in an amount of from 10 mol-percent to 80 mol-percent. The invention also relates to the copolymer so produced which has an excellent cold stability and elasticity.

3,562,230

BROMINATION OF COPOLYMERS OF NON-TERMINAL ACETYLENIC METHACRYLATES AND PRODUCTS PRODUCED THEREBY

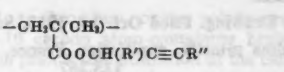
Gaetano F. D'Alelio, South Bend, Ind., assignor to Geigy Chemical Corporation, Ardsley, N.Y., a corporation of New York

No Drawing. Filed June 28, 1968, Ser. No. 740,863

Int. Cl. C08f *15/18*

U.S. Cl. 260—85.5 **9 Claims**

The process disclosed herein involves the bromination of copolymers of non-terminal acetylenic methacrylates and the brominated products produced thereby. Acetylenic methacrylate polymers upon dibromination of the acetylene group give ethylenic dibromo derivatives which are hydrolytically stable. In comparison the derivative obtained upon dibromination of a polymer of allyl methacrylate has dibromopropyl methacrylate repeating units which are susceptible to hydrolysis of the bromine. Thus where it is desired to impart flame resistant properties to a polymer it is possible to impart both flame resistance and hydrolytic stability by dibromination of corresponding copolymers containing repeating units of the formula



wherein R' is H or R", and R" is a hydrocarbon radical of 1–8 carbons. Where higher proportions of bromine are desired and hydrolytic stability is of less importance, tetrabromination can be effected.

3,562,231

BROMINATION OF PROPARGYL METHACRYLATE POLYMERS AND PRODUCTS PRODUCED THEREBY

Gaetano F. D'Alelio, South Bend, Ind., assignor to Geigy Chemical Corporation, Ardsley, N.Y., a corporation of New York

No Drawing. Filed June 28, 1968, Ser. No. 740,862

Int. Cl. C08f *15/18*

U.S. Cl. 260—85.5 **9 Claims**

The process disclosed herein is the bromination of polymers of propargyl methacrylate and the brominated products produced thereby. Propargyl methacrylate has a terminal acetylenic group which upon bromination gives an ethylenic dibromo derivative which is hydrolytically stable. In comparison the derivative obtained upon dibromination of a polymer of allyl methacrylate gives dibromopropyl methacrylate repeating units whereas the dibromonation of propargyl methacrylate gives dibromoallyl methacrylate repeating units. In view of the ethylenic group in the dibromoallyl radical, the bromine atoms are very resistant to hydrolysis whereas the bromine in the dibromopropyl radical is much more susceptible to hydrolysis. Moreover, the bromination of a terminal acetylenic group proceeds with much greater facility and more thoroughly under milder conditions than is the case when the acetylenic group is a non-terminal acetylenic such as 2-butyn-1-yl acrylate or methacrylate.

3,562,232

CONTINUOUS POLYMERIZATION OF ACRYLONITRILE AND MONO-ETHYLENICALLY UNSATURATED QUATERNARY AMMONIUM SALTS

Peter Adrian Jarovitzky, Stamford, and Joseph Jacinto Pellon, New Canaan, Conn., assignors to American Cyanamid Company, Stamford, Conn., a corporation of Maine

No Drawing. Filed Oct. 31, 1968, Ser. No. 772,408

Int. Cl. C08f *15/22*

U.S. Cl. 260—85.5 **5 Claims**

In the process of continuously polymerizing acrylonitrile with a monoethylenically unsaturated quaternary ammonium salt in an aqueous acidic reaction mass containing a water-soluble inorganic free radical generating polymerization catalyst to produce polymers containing 50 to 70 percent acrylonitrile and 30 to 50 percent monoethylenically unsaturated quaternary ammonium salt, the improvement comprising performing said polymerization in the presence of a concentration of nitrate ions in said reaction mass equal to at least 80 percent of that stoichiometrically equal to the concentration of monoethylenically unsaturated quaternary ammonium salt in solution therein and sufficent to keep said reaction mass fluid.

3,562,233

PROCESSES FOR COPOLYMERISING VINYLIC ARYL COMPOUNDS WITH EPOXY ESTERS OF α,β-UNSATURATED ACIDS

Françoise Lanos, Paris, and Françoise Katzanevas, Bageneux, France, assignors to Societe Nationale des Petroles d'Aquitaine, Courbevoie, France, a corporation of France

No Drawing. Filed Oct. 14, 1968, Ser. No. 767,459

Claims priority, application France, Oct. 20, 1967, 125,267

Int. Cl. C08f *1/11, 19/10*

U.S. Cl. 260—86.7 15 Claims

In a process for the preparation of a soluble copolymer of a vinylic aryl compound and an epoxy ester of an α,β-unsaturated acid, copolymerisation of a mixture of the monomers is carried out in suspension at a temperature of 20° to 100° C., in the presence of at least one suspension agent and at least one polymerisation catalyst, the epoxy ester being present in a molar ratio of less than 20% with respect to the monomer mixture, and the organic phase and the aqueous phase being in a ratio by volue of 0.2 through 0.8.

3,562,234

PRODUCTION OF A GRANULATE OF A GIVEN PARTICLE SIZE FROM SAPONIFIED ETHYLENE-VINYL ACETATE COPOLYMERS

Raoul Resz, Cologne-Stammheim, Walter Oetke, Leverkusen, Rudolf Erdmenger, Bergisch Gladbach, and Herbert Bartl, Cologne-Stammheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany, a corporation of Germany

Filed May 15, 1967, Ser. No. 638,362

Claims priority, application Germany, July 29, 1966, F 49,830

Int. Cl. C08f *27/14*

U.S. Cl. 260—87.3 3 Claims

Process for the production of partially or completely saponified ethylene-vinyl acetate copolymers having a particle size of 0.1 to 0.7 mm. and apparatus therefor, the process involving gelling hot saponification solution containing organic solvent by cooling, extruding gelled solution to form filaments of specified diameter, producing particles of specified length from said filaments, removing organic solvent and saponification catalyst from said particles and isolating resulting copolymer particles.

3,562,235

MULTISTAGE EMULSION POLYMERIZATION OF ALKYL ACRYLATES AND ALKYL METHACRYLATES

Charles F. Ryan, Warminster, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa., a corporation of Delaware

No Drawing. Continuation-in-part of application Ser. No. 526,038, Feb. 9, 1966. This application June 7, 1968, Ser. No. 735,191

Int. Cl. C08f *15/18*

U.S. Cl. 260—885 13 Claims

Thermoplastic acrylic polymer compositions prepared in multi-stage emulsion fashion are provided. For example, the polymer particles have rubbery, cross-linked cores of alkyl acrylates at least partially sheathed by increasingly harder thermoplastic copolymer sheaths of alkyl acrylates and alkyl methacrylates with some penetration between the layers. The compositions may be extruded, blown and/or formed into film or sheet.

3,562,236

ACETYLENIC METHACRYLATES

Gaetano F. D'Alelio, South Bend, Ind., assignor to Geigy Chemical Corporation, Ardsley, N.Y., a corporation of New York

No Drawing. Filed June 28, 1968, Ser. No. 740,864

Int. Cl. C08f *3/62*

U.S. Cl. 260—89.5 10 Claims

The compounds disclosed herein are acetylenic methacrylates having the formula

$$CH_2=C(CH_3)COO—Z—C\equiv CH$$

wherein Z represents a divalent hydrocarbon radical having at least 2 carbon atoms. Because of their terminal acetylenic radical these compounds are very reactive and capable of producing various acetylenic derivatives. Moreover, the methyl group in the methacrylate portion of the ester gives this compound much greater stability than possessed by the corresponding acrylates. This stability is particularly useful when it is desirable to produce reaction on the acetylenic group but not on the ethylenic. Moreover, the terminal acetylenic makes possible certain reactions which cannot be effected with compounds in which the acetylenic group is not a terminal group. Furthermore the presence of the methyl group in the methacrylate portion of the ester gives sufficient greater polymerization tendency, as compared with the acrylate, that the ethylenic group can be polymerized with less stringent conditions and thereby reduces the tendency for reaction of the anionic initiator with the ester group; the molecular weights and conversions are thereby higher. This increased selectivity of ethylenic polymerization over acetylenic makes it possible to prepare linear homopolymers and thereby to avoid the necessity to resort to copolymeriaztions with monoethylenic compounds such as styrene, and monounsaturated acrylates and methacrylates.

3,562,237

PREPARATION OF VINYL CHLORIDE POLYMERS

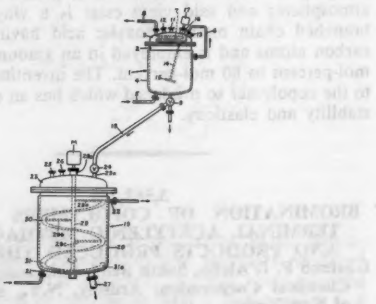
Jean Claude Thomas, Lyon, Rhone, France, assignor to Produits Chimiques Pechiney - Saint - Gobain, Paris, France

Continuation-in-part of application Ser. No. 347,147, Feb. 25, 1964. This application Nov. 30, 1964, Ser. No. 414,697

Claims priority, application France, Apr. 30, 1964, 972,927

Int. Cl. C08f *1/04, 3/30*

U.S. Cl. 260—92.8 1 Claim



Method and apparatus for the polymerization in mass of vinyl chloride and mixtures thereof with vinyl acetate, wherein the monomer is prepolymerized in a first autoclave, under controlled temperature and pressure and at a relatively rapid rate for a relatively short time, until polymerization hass been completed to about 7 to 15%. The flowable mixture of monomer and polymer is then rapidly transferred to a second autoclave wherein polymerization to the desired degree, say 70%, is completed at

a slower rate and for a more extended time. The second autoclave is of a type having a tank with vertical axis of symmetry and a helical mixing blade rotating on the axis of symmetry and closely adjacent the walls of the tank, but radially spaced from its axis of rotation. Thereby a tubular column of mixture is continuously moved vertically in contact with the temperature-controlled walls of the ttank, and returns in a central generally cylindrical column along the axis of rotation. Precise and uniform temperature control are thus effected, and granulometry is improved.

3,562,238

SUSPENSION POLYMERIZATION PROCESS FOR VINYL CHLORIDE POLYMERS

Clarence E. Parks, Bay Village, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y., a corporation of New York

No Drawing. Filed Sept. 16, 1968, Ser. No. 762,313

Int. Cl. C08f *1/11, 3/30*

U.S. Cl. 260—92.8 **5 Claims**

In the suspension polymerization of vinyl chloride polymers, undesirable polymer build-up on the walls of polymerization reactors is reduced when the polymerization reaction is conducted in the presence of small amounts of magnesium hydroxide.

3,562,239

PREPARATION OF $TiCl_3$ COMPONENT OF OLEFIN POLYMERIZATION CATALYST

Martijn H. de Jong and Pieter van Prooijen, Rotterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y., a corporation of Delaware

No Drawing. Filed June 21, 1967, Ser. No. 647,613

Claims priority, application Netherlands, June 30, 1966, 6609092

Int. Cl. C08f *3/08*

U.S. Cl. 260—93.7 **7 Claims**

Titanium trichloride for use as catalyst component in stereoregular olefin polymerization is prepared by gradual addition of a solution of titanium tetrachloride in inert diluent to a solution of trialkyl aluminum in inert diluent. The mixture is prepared and held at a temperature below —30° C. and most advantageously below —50° C. until addition is complete, is thereafter gradually warmed up to not above 80° C. until conversion to $TiCl_3$ is complete, and is then heated to an elevated temperature at which the $TiCl_3$ is converted to the violet form.

3,562,240

POLYMERIZING CONJUGATE DIENES

André Miletto, Pau, and Jean Teitgen, Arthez-de-Bearn, France, assignors to Societe Nationale des Petroles d'Aquitaine, Courbevoie, France

No Drawing. Filed Nov. 18, 1968, Ser. No. 776,789

Claims priority, application France, Nov. 20, 1967, 128,872

Int. Cl. C08d *1/24, 1/36;* **C08f** *1/62*

U.S. Cl. 260—94.3 **4 Claims**

Polymerization or copolymerization of conjugate dienes in aqueous emulsion is improved in that the conversion of monomer is increased up to a value of 70% to 90%, while the commercial quality of polymers obtained is the same or even somewhat better than that of conventional corresponding polymers. This result is obtained by always keeping the rate of polymerization at at least 6% of monomer per hour, until 70% to 90% of monomer are converted into polymer. The required rate is controlled by continuously introducing a polymerization catalyst system and a chain-limiting agent over the whole period of polymerization. Optionally this control is also effected by adding a supplemental amount of emulsifier to the emulsion when about the half of the monomer is polymerized.

3,562,241

PROCESS FOR THE PRODUCTION OF 1-OLEFIN POLYMERS HAVING INCREASED MELT INDEX

Donald R. Witt, Bartlesville, Okla., assignor to Phillips Petroleum Company, a corporation of Delaware

No Drawing. Filed Nov. 15, 1965, Ser. No. 507,673

Int. Cl. C08f *1/66*

U.S. Cl. 260—94.9 **3 Claims**

Pretreatment of a chromium oxide polymerization catalyst with a 4–10 carbon atom-containing branched chain aliphatic olefin prior to the utilization of the catalyst for the preparation of a 1-olefin polymer and thereafter carrying out the 1-olefin polymerization in a liquid branched chain paraffin reaction medium and in the presence of hydrogen results in the production of higher melt index 1-olefin polymers.

3,562,242

PROCESS FOR THE TREATMENT OF POLYETHYLENE

Adrien Nicco, Bethune, and Bernard Lambert, Lens, France, assignors to Ethylene-Plastique, Paris, France, a French society

No Drawing. Filed Aug. 28, 1968, Ser. No. 755,780

Claims priority, application France, Sept. 14, 1967, 121,006

Int. Cl. C08f *29/04, 45/67*

U.S. Cl. 260—94.9 **5 Claims**

A method of improving the optical properties of polyethylene which comprises incorporating an aluminium alcoholate into molten polyethylene, allowing the resulting mixture to solidify, and contacting the solidified mixture with an aqueous reagent at a temperature from 60° C. up to but not including the melting point of the polyethylene in the mixture.

3,562,243

PROCESS FOR SEPARATION OF ROSIN ADDUCTS FROM MIXTURES WITH ROSIN

Paul H. Aldrich, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del., a corporation of Delaware

No Drawing. Continuation of application Ser. No. 669,722, Sept. 22, 1967. This application Dec. 22, 1969, Ser. No. 883,682

Int. Cl. C09f *1/02*

U.S. Cl. 260—111 **5 Claims**

A process for separation of all adducts of rosin from a mixture comprised of adducted rosin and non-adducted rosin is disclosed.

3,562,244

8-L-ORNITHINE VASOTOCIN AND INTERMEDIATES THEREFOR

Miklos Bodanszky, Princeton, and Miguel A. Ondetti, Highland Park, N.J., assignors, by mesne assignments, to E. R. Squibb & Sons, Inc., New York, N.Y., a corporation of Delaware

No Drawing. Filed Sept. 12, 1963, Ser. No. 308,368

Int. Cl. C07c *103/52;* **C07d** *27/52*

U.S. Cl. 260—112.5 **1 Claim**

8-L-ornithine vasotocin, 8-L-ornithine vasopressin, process for their synthesis and intermediates therefor. A process for converting ornithine peptides (e.g., 8-L-ornithine vastocin and 8-L-ornithine vasopressin) into the corresponding arginine peptides by treatment with 1-guanyl-3,5-dimethylpyrazole, HNO_3 and other guanylating agents.

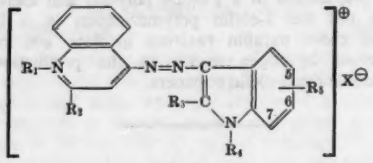
3,562,245

BASIC QUINALDINIUMAZOINDOLE DYESTUFFS

Reinhard Mohr and Johann Ostermeier, Offenbach (Main), Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany, a corporation of Germany

No Drawing. Filed Apr. 4, 1968, Ser. No. 718,921
Claims priority, application Germany, Apr. 8, 1967, F 52,071
Int. Cl. C09b 29/36; D06p 1/04, 1/10
U.S. Cl. 260—146 5 Claims

Azo-dyestuffs of the formula



wherein R_1 represents methyl or ethyl, R_2 represents methyl, R_3 represents hydrogen, methyl or phenyl, R_4 represents hydrogen or methyl, R_5 represents hydrogen, fluorine, chlorine, bromine, lower alkyl, lower alkoxy, cyano or nitro, and X^- represents an anion, said dyestuffs being suitable for the dyeing or printing of tanned cellulose fibres, silk, leather or fully synthetic fibres and yielding dyeings or prints of a very good tinctorial strength and of very good fastness properties to light and to wet processing.

3,562,246

MONO- AND DISAZO DYES AND THE 1:1 AND 1:2 METAL COMPLEXES THEREOF CONTAINING ONE OR MORE THIOSULFATE GROUPS

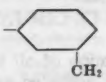
Frederick E. Barwick III and Gordon A. Geselbracht, Charlotte, N.C., assignors to Martin Marietta Corporation, a corporation of Maryland

No Drawing. Filed Sept. 25, 1967, Ser. No. 670,435
Int. Cl. C09b 29/24, 45/14, 45/24
U.S. Cl. 260—148 5 Claims

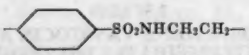
Azo dyes and 1:1 and 1:2 metal complexes thereof are disclosed, said dyes being characterized in having in their molecules at least once the radical of

$$R_1—NH—X—SSO_3Z$$

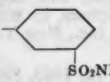
wherein X is phenylene, ethylene, propylene,



in which the $—CH_2—$ is bonded to the $—SSO_3Z$, chlorophenylene in which the Cl is ortho to the $—SSO_3Z$, methoxyphenylene in which the methoxy is meta to the $—SSO_3Z$,



in which a methylene is bonded to the $—SSO_3Z$, or



in which a methylene is bonded to the $—SSO_3Z$; Z is H, Na or K; and R_1 is 8-hydroxy-6-sulfo-2-naphthyl, 5-hydroxy - 7 - sulfo - 2-naphthyls, 6,8-disulfo-2-naphthyl, 5,7 - disulfo - 2 - naphthyl, 6-sulfo-2-naphthyl, 8-sulfo-2-naphthyl, 5-sulfo - 2 - naphthyl, 8-hydroxy-4,6-disulfo-1-naphthyl, 7-sulfo - 2-naphthyl, or 4-sulfo-1-naphthyl. The dyes are particularly useful for making wet-fast dyeings on cotton and regenerated cellulose textile fabrics.

3,562,247

MONOAZO DYES CONTAINING PHTHALIMIDES

Johannes Dehnert, Ludwigshafen (Rhine), Walter Grosch, Mannheim, and Gerhard Gnad, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Sept. 11, 1968, Ser. No. 759,230
Claims priority, application Germany, Sept. 13, 1967, P 16 44 068.9
Int. Cl. C09d 29/06
U.S. Cl. 260—152 6 Claims

Disperse dyes derived from aminophthalimides and 2-naphthylamine. They are especially useful for dyeing synthetic linear polyamides.

3,562,248

BISAZO PIGMENTS DERIVED FROM COUPLERS OBTAINED BY CONDENSING 8-AMINO-2-NAPHTHOLS WITH DICARBOXYLIC ACID CHLORIDES

Freeman B. Jones, Jr., East Lansing, Mich., and Santokh S. Labana, Webster, N.Y., assignors to Xerox Corporation, Rochester, N.Y., a corporation of New York

Filed Feb. 1, 1967, Ser. No. 613,294
Int. Cl. C07c 107/08; C07d 87/54; C09b 33/08
U.S. Cl. 260—184 5 Claims

Bisazo compounds are disclosed as are monochromatic and polychromatic electrophoretic imaging processes using these compounds. A typical member of this group is N,N′ - bis 1-(1′-naphthylazo)-2-hydroxy-8-naphthyl adipdiamide.

3,562,249

ARYLENE - BIS - [DI - (LOWER ALKOXYCARBONYL) - BENZENE - AZO - 2 - HYDROXY - 3-CARBAMOYL-NAPHTHALENE] PIGMENTS

Ernfred Schnabel, Reinach, near Basel, and Emil Stocker, Riehen, near Basel, Switzerland, assignors to J. R. Geigy A.G., Basel, Switzerland

No Drawing. Filed Dec. 18, 1967, Ser. No. 691,228
Claims priority, application Switzerland, July 11, 1967, 9,888/67
Int. Cl. C08g 51/14; C09b 33/04; C09d 11/00
U.S. Cl. 260—184 6 Claims

Pigments are disclosed herein which consist of, per molecule, two benzene-azo-2-hydroxy-3-carbamoyl-naphthalene dyestuff radicals in which each of the two benzene nuclei is substituted by two carboxylic acid ester groups, especially two lower alkoxy-carbonyl groups, one of which is in o-position to the azo bridge and the other is in p-position to the former ester group, and the carbamoyl groups of which moieties are linked by a bridge member bonded to the two nitrogen atoms of said carbamoyl groups; these novel pigments are distinguished by pure, vivid shades, great colour strength and very good fastness properties. The pigment in which the carboxylic acid ester groups are methoxycarbonyl groups and the bridging member is phenylene is distinguished by an unexpected carmine-red shade of great purity and strength of colour. These pigments are suitable for the pigmenting of polymeric organic material, particularly plastics such as polyvinylchloride and of printing inks for the graphic industry and in finely distributed form also for the pigmenting of curable resins and cellulose esters.

3,562,250

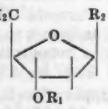
2′,5′-DIDEOXY-5′-FLUORO NUCLEOSIDES AND PROCESS FOR PREPARING SAME

Peter Langen and Gotthard Kowollik, Berlin, Germany, assignors to Deutsche Akademie der Wissenschaften Zu Berlin, Berlin-Adlershof, Germany

No Drawing. Filed July 30, 1968, Ser. No. 748,595
Int. Cl. C07d 51/52, 51/54
U.S. Cl. 260—211.5 10 Claims

A cytostatic composition capable of substantially in-

hibiting the DNA synthesis of ascites tumor cells in vitro, having the formula:



wherein R_1 is a hydrogen atom or an acetyl radical and R_2 is selected from the group consisting of 5-alkyl and 5-halogen substituted 2,4-dihydroxy-pyrimidine, 5-alkyl and 5-halogen substituted 2-hydroxy-4-amino-pyrimidine, and purine substituted in 2-position, 6-position or 2 and 6 position with an amine or hydroxyl group.

These compounds may be obtained by reacting 5'-arylsulphonyl- or 5'-mesyl-substituted 2'-deoxyribonucleoside in a solvent medium with an alkali metal fluoride, separating the thereby-formed alkali metal arylsulphonate from the residual reaction mixture, evaporating the residual reaction mixture at reduced pressure, and recovering the compound from the dry residue by taking up the dry residue with a mixture of polar and non-polar solvents, followed by chromatographic separation of the compounds from the thus-formed solution.

3,562,251

CERTAIN 2,3-DIHYDRO-1,4-BENZODIAZEPINE-3-CARBOXAMIDE DERIVATIVES

Rodney Ian Fryer, North Caldwell, and Leo Henryk Sternbach, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J., a corporation of New Jersey

No Drawing. Filed Apr. 11, 1967, Ser. No. 629,921

Int. Cl. C07d *53/06*

U.S. Cl. 260—239 **4 Claims**

2,3 - dihydro - 3 - (N - substituted - carbamoyl) - 7-nitro-1,4-benzodiazepines which are useful as anticonvulsants and a process for their preparation from 2,3-dihydro - 7 - nitro - 1,4 - bendodiazepin - 2 - ones by means of transamidation with ammonia and amino compounds. Also included are intermediates in this process.

3,562,252

DIAZOTRICYCLODODECANES

Leo A. Paquette, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich., a corporation of Delaware

No Drawing. Filed July 16, 1962, Ser. No. 210,196

Int. Cl. C07d *53/00*

U.S. Cl. 260—239.3 **3 Claims**

1. 3,7 - bis(2-hydroxyethyl)-3,7-diazatricyclo[4.2.2.$2^{2,5}$]-dodecane-4,8-dione.

3,562,253

1,4 - DIALKYL - 2,5 - PIPERAZINEDIONE - 3,6 - DITHIOACETATES, -DITHIOLS, -DISULFIDES AND -TETRASULFIDES

Patrick Willoughby Trown, Suffern, N.Y., assignor to American Cyanamid Company, Stamford, Conn., a corporation of Maine

No Drawing. Filed July 15, 1968, Ser. No. 744,694

Int. Cl. C07d *93/44*

U.S. Cl. 260—239.3 **8 Claims**

This disclosure describes compounds of the class of 1,4-dialkyl - 2,5 - piperazinedione-3,6-dithioacetates, -dithiols, -disulfides and -tetrasulfides useful an antifungal and antiviral agents.

3,562,254

PRODUCTION OF CAPROLACTAM STARTING WITH CYCLOHEXANONE

Desmond Sheehan, Hamden, Anthony F. Vellturo and Walter A. Gay, Cheshire, William P. Hegarty, Hamden, and Donald D. Threlkeld, Cheshire, Conn., assignors to The Techni-Chem Company, Wallingford, Conn., a corporation of Connecticut

Filed Apr. 24, 1969, Ser. No. 818,980

Int. Cl. C07d *41/06*

U.S. Cl. 260—239.3 **4 Claims**

A continuous process for the production of caprolactam, including acetylation of cyclohexanone with acetic anhydride and ketene (which reacts with acetic acid formed in the acetylation reaction). The cyclohexenyl acetate formed is then nitrated with concentrated nitric acid and the resulting nitrocyclohexanone separated by distillation. Acetic anhydride is recycled to the acetylation reaction, and acetic acid together with makeup acetic acid is pyrolyzed to ketene, which is also used in the acetylation reaction. The nitrocyclohexanone is then cleaved with ammonium hydroxide to form the ammonium salt of 6-nitro caproic acid, which is then reduced with hydrogen and a hydrogenation catalyst to produce 6-amino caproic acid. This intermediate is then separated by removing ammonia, which is recycled with makeup ammonia to the cleavage reaction. The aqueous 6-amino caproic acid is then heated in dilute aqueous solution, 5% to 25% w./v., to cyclize to caprolactam. The caprolactam is then extracted with an organic solvent, such as trichloroethylene, and the unconverted aqueous amino caproic acid recycle to the cyclization step. Solvent is then removed and the caprolactam purified by known means. An important part of the process is that there is no ammonium sulfate formed, which in earlier processes was an undesirable by-product. The ammonia used in the cleavage reaction is recycled and there is no large loss of raw material.

3,562,255

17-PROPARGYLAMINES OF STEROIDAL DITHIOKETALS

Donald W. Oliver, King of Prussia, and Gerhard R. Wendt, Havertown, Pa., assignors to American Home Products Corporation, New York, N.Y., a corporation of Delaware

No Drawing. Filed Apr. 29, 1969, Ser. No. 820,335

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.5 **23 Claims**

13-alkyl-17α-aminopropargyl-17-hydroxygon - 4 - en-3-one, cyclic ethylene thioketals and alkanoates, optionally halo-substituted at C–4, (I) and their salts are useful biocidally as trichomonacides and amebicides, and pharmacologically as bronchodilators. Compounds (I) are prepared by treating the corresponding 13-alkyl-17α-ethynyl-17-hydroxygon-4-en-3-one, cyclic ethylene thioketal (II) with formaldehyde and an appropriately-substituted secondary amine.

3,562,256

1,3-DIALKYL-5-(SUBSTITUTED ARYLSULFONYL)-TETRAHYDRO-1,3,5-TRIAZINE-4-THIONES

Fred E. Boettner, Huntingdon Valley, and Michael C. Seidel, Levittown, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa., a corporation of Delaware

No Drawing. Filed June 9, 1967, Ser. No. 644,779

Int. Cl. C07d *55/14;* **A61k** *27/00*

U.S. Cl. 260—239.7 **1 Claim**

Disclosed herein is a class of novel compounds; namely, 1,3-dialkyl-5-(substituted arylsulfonyl)-tetrahydro - 1,3,5-triazine-4-ones and thiones. These compounds are particularly useful for the control of hyperglycemia and consequently exhibit exceptional hypoglycemic activity. In addition, processes for the preparation of these hypoglycemic compounds are described along with pharmaceutical compositions and methods of lowering blood sugar in animals by the administration of such compounds.

3,562,257

BENZOTHIAZEPINE DERIVATIVES

Hiroshi Kugita and Hirozumi Inoue, Tokyo-to, and Muneyoshi Ikezaki and Satoshi Takeo, Oomiya-shi, Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan, a corporation of Japan

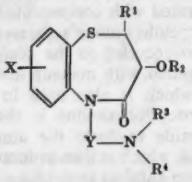
No Drawing. Filed Oct. 17, 1968, Ser. No. 768,550

Claims priority, application Japan, Oct. 28, 1967, 42/69,545, 42/69,546; June 17, 1968, 43/41,789, 43/41,790, 43/41,791

Int. Cl. C07d *43/40*

U.S. Cl. 260—239.3 43 Claims

Benzothiazepine derivatives of the formula:



wherein R^1 is a phenyl group which may be substituted with 1 to 3 lower alkyl groups, lower alkoxy groups or halogen atoms, R^2 is a hydrogen atom or a lower alkanoyl group, R^3 and R^4 are each a lower alkyl group, X is a hydrogen atom or a halogen atom and Y is an alkylene group of 2 or 3 carbon atoms, and their non-toxic acid-addition salts. The compounds are useful as antidepressants, tranquilizers and coronary vasodilators.

3,562,258

N^1-[p-AMINO BENZENE SULFONYL]-N^3-[4.5-DIMETHYL OXAZOLYL-(2)] GUANIDINE

Werner Loop, Hamburg-Lokstedt, and Horst Baganz, Friedrich-Wilhelm Kohlmann, and Hans Schultze, Moorrege, near Utersen, Germany, assignors to Nordmark-Werke G.m.b.H., Hamburg, Germany, a corporation of Germany

No Drawing. Filed Feb. 10, 1969, Ser. No. 798,165

Int. Cl. A61k *27/00*; C07d *85/46*

U.S. Cl. 260—239.9 1 Claim

The present invention is related to N^1-[p-amino-benzene sulfonyl]-N^3-[4.5-dimethyl oxazolyl-(2)] guanidine, pharmaceutical compositions comprising the same, and to a process for the treatment of bacterial dysenteritides.

3,562,259

7-METHYL-1,2-METHYLENE-4-CHLORO STEROIDS AND PROCESS FOR THE PRODUCTION THEREOF

Helmut Hofmeister, Hermann Steinbeck, and Rudolf Wiechert, Berlin, Germany, assignors to Schering AG, Berlin and Bergkamen, Germany

No Drawing. Filed Dec. 3, 1968, Ser. No. 780,872

Claims priority, application Germany, Dec. 7, 1967, P 16 43 054.9

Int. Cl. C07c *169/18*

U.S. Cl. 260—239.55 30 Claims

4-chloro-7-beta-methyl-1-alpha,2-alpha-methylene-4-pregnene or androstene-3-one compounds which may also be substituted by hydroxy or oxy in the 11-position and may have various substituents in the 17-position including also the corresponding delta^{4,6}-7-methyl compounds. The compounds are useful for treatment of gynecological complaints.

The compounds are made by reacting a corresponding steroid which is 6-beta, 7-beta-methylene substituted with a halogen acid followed by reduction to remove the halogen from the 7-beta-halogen-methyl group and followed further if desired by dehydrogenation to form a 6–7 double bond.

3,562,260

2-CARBONYL-ESTRATRIENES AND METHOD OF THEIR PREPARATION

Pietro De Ruggieri, Carmelo Gandolfi, and Umberto Guzzi, Milan, Italy, assignors to Ormonoterapia Richter S.p.A., Milan, Italy, a corporation of Italy

No Drawing. Filed Aug. 16, 1966, Ser. No. 572,665

Claims priority, application Italy, Aug. 23, 1965, 18,855/65

Int. Cl. C07c *169/10, 173/00*

U.S. Cl. 260—239.55 19 Claims

Novel 2,3-disubstituted cholesta-1,3,5(10)-trienes and estra-1,3,5(10)-trienes and methods for their preparation. These compounds are useful as estrogens, anti-cholesterolemic agents, hypophyse blocking agents and anti-androgens.

3,562,261

MONO- AND DI-NICOTINATES OF PHOTOSENSITIVE QUATERNARY AMMONIUM COMPOUND AND PRODUCTION THEREOF

Masaru Banno and Shigeo Yasui, Okayama, Okayama Prefecture, Japan, assignors to Eisai Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Jan. 22, 1968, Ser. No. 699,324

Int. Cl. C07d *31/36*

U.S. Cl. 260—240.1 2 Claims

This invention is concerned with novel mono- and dinicotinates of certain photosensitive quaternary ammonium compounds prepared by reacting the corresponding photosensitive quaternary ammonium halide with nicotinic acid in the presence of silver oxide. The novel nicotinates have an excellent water-solubility and pharmacological and biotical activities with relatively low toxicity and can be used as medicaments as well as active ingredients of various hygienic preparations for external applications.

3,562,262

TERTIARY AMINOPROPYL β-QUATERNARY 3,4,5-TRIMETHOXYBENZOATES

Kurt Schmidt, Zell, near Esslingen (Neckar), and Ernest Gunther, Eitorf (Sieg), Germany, assignors to Krewel Leuffen G.m.b.H. Arzneimittelfabrik, Eitorf, near Cologne, Germany

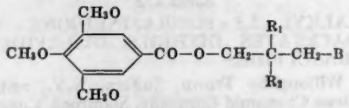
No Drawing. Continuation-in-part of application Ser. No. 384,516, July 22, 1964. This application Aug. 21, 1967, Ser. No. 661,789

Claims priority, application Germany, July 24, 1963, K 50,328

Int. Cl. C07d *87/36*

U.S. Cl. 260—247.2 8 Claims

The specification discloses tertiary amino propyl β-quaternary esters of 3,4,5-trimethoxybenzoic acid that exhibit a high CNS damping effect, in the form of sedative, coronory blood vessel enlarging, blood pressure reducing, intestinal spasmolytic properties, and the respective therapeutic indices are excellent and toxicity low. The esters of the invention have the general formula:



in which R_1 and R_2 represent alkyl (at least one of which is greater than methyl), aralkyl or aryl residues, and B represents a dialkyl amino residue, a saturated N-heterocyclic ring, or a morpholino group. R_1 and R_2 may represent, for instance, the following substitution pairs: methyl-propyl, ethyl-ethyl, ethyl-benzyl and ethyl-phenyl. B may represent, for example, dimethyl amino, diethyl amino, pyrrolidino, piperidino or morpholino groups.

3,562,263

2-SUBSTITUTED - 2 - OXAZOLINES AND 2-SUBSTITUTED - 5,6 - DIHYDRO-1,3,4-OXAZINES AND THEIR PREPARATION

Morton H. Litt and Alan J. Levy, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y., a corporation of New York

No Drawing. Filed July 13, 1964, Ser. No. 382,342
Int. Cl. C07d *87/06*
U.S. Cl. 260—244 17 Claims

This invention relates to a novel process for the preparation of 2-substituted cyclic iminoethers. More particularly this invention relates to a novel process for the preparation of 2-substituted oxazolines and oxazines by the vapor phase cyclodehydration of N-(ω-hydroxyalkyl)-amides in the presence of a catalyst. These compounds are valuable intermediates for the preparation of useful polymers.

3,562,264

TRANS-DIHYDROXY-BIS-HYDROXYCARBONYL-ETHYLENE SALTS

Yoichi Sawa, Suita, Hajime Fujimura, Kyoto, Toru Masuda, Nishinomiya, and Yutaka Yamakawa, Kyoto, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Feb. 13, 1968, Ser. No. 705,004
Claims priority, application Japan, Feb. 13, 1967, 42/9,132
Int. Cl. C07d *51/64, 87/22*
U.S. Cl. 260—246 3 Claims

The morpholine and piperazine salts of trans-dihydroxy-bis-hydroxycarbonylethylene (dihydroxy fumaric acid) are useful as antipyretic, analgesic and anti-inflammatory agents of low toxicity. Unlike acetyl salicylic acid, they cause no gastroenteric disorders; unlike dihydroxy fumaric acid they are stable to elevated temperature and humidity.

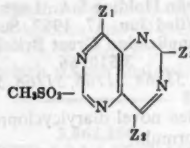
3,562,265

2-METHYLSULFONYL-4,6,8-TRISUBSTITUTED-[5,4-d]-PYRIMIDINES

Masuo Murakami, Shigemi Kawahara, Sanae Ishida, and Mikio Ohno, Tokyo, and Hiroshi Horiguchi, Tokorozawa-shi, Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

No Drawing. Filed Aug. 15, 1967, Ser. No. 660,590
Claims priority, application Japan, Aug. 16, 1966, 41/53,408; Jan. 18, 1967, 42/3,453
Int. Cl. C07d *87/40*
U.S. Cl. 260—246 6 Claims

Novel substituted 2 - methylsulfonylpyrimido - [5,4-d] pyrimidines of the formula:



wherein each of Z_1 and Z_2 is selected from the group consisting of diethanolamino, piperidino and morpholino groups and Z_3 is selected from the group consisting of halogen and diethanolamino, piperidino and morpholino groups. The novel pyrimidines have coronary vasodilating activity and attain high blood levels by oral administration.

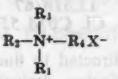
3,562,266

QUATERNARY AMMONIUM HALIDES HAVING A 2-CHLORO CYCLOHEXYL OR 2-CHLORO ALKYL SUBSTITUENT

Francesco Minisci, Milan, and Remo Galli, Cremona, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy, a corporation of Italy

No Drawing. Continuation of application Ser. No. 541,068, Apr. 8, 1966. This application May 26, 1969, Ser. No. 828,814
Int. Cl. C07d *87/30*
U.S. Cl. 260—247 11 Claims

The present invention relates to quaternary ammonium halides having a chlorine atom on a carbon atom adjacent to that one bound to the nitrogen atom and represented by the formula



wherein X is a halogen selected from Cl, Br, I; R_1 and R_2 are alkyl or cycloalkyl, equal or different, saturated or unsaturated or together with the ammonium nitrogen form a heterocyclic ring; R_3 is an alkyl, containing a chlorine atom in the β position in respect of the ammonium nitrogen; R_4 is an alkyl or an aralkyl; and R_1, R_2, R_3 and R_4 containing from 1 to 20 carbon atoms. Quaternary ammonium halides are useful as surfactants.

3,562,267

DERIVATIVES OF 3-(5-NITROFUR-2-YL)-5-AMINOISOXAZOLES

Graham Arton Howarth, Wilmslow, and William Hoyle, Bramhall, England, assignors to Geigy Chemical Corporation, Greenburgh, N.Y., a corporation of Delaware

No Drawing. Filed Aug. 10, 1966, Ser. No. 571,412
Claims priority, application Great Britain, Aug. 18, 1965, 35,447/65, 35,448/65
Int. Cl. C07d *85/22, 87/38;* C03d *93/10*
U.S. Cl. 260—247.5 25 Claims

3-(5-nitrofur-2-yl)-5-aminoisoxazoles having a nitrile, ester, amide or urea function in the 4-position are antibacterial agents. They are prepared through condensation of 5-nitro-2-furohydroxamoyl halide with a cyanomethylnitrile, a cyanomethylester, cyanomethylamide or a cyanomethylurea under basic conditions.

3,562,268

3-MORPHOLINO- AND 3-PIPERAZINO-1,2,8,9-TETRAAZAPHENALENES

Karl J. Doebel, Ossining, and John E. Francis, Pleasantville, N.Y., assignors to Geigy Chemical Corporation, Ardsley, N.Y., a corporation of New York

No Drawing. Continuation-in-part of application Ser. No. 718,227, Apr. 2, 1968, which is a continuation-in-part of applications Ser. No. 445,762, Apr. 5, 1965; Ser. No. 539,303, Apr. 1, 1966; and Ser. No. 583,980, Oct. 3, 1966. This application Mar. 24, 1969, Ser. No. 810,005
Int. Cl. C07d *51/02*
U.S. Cl. 260—247.5 20 Claims

3-morpholino- and 3-piperazino-1,2,8,9-tetraazaphenalenes, optionally substituted in the 4,5,6,7 and/or 9 positions and their salts are cardiovascular agents and can be prepared from the corresponding 1,2,8,9-tetraazaphenalenes. A representative embodiment is 3-N-(2,6-dimethylmorpholino)-9-methyl-1,2,8,9-tetraazaphenalene.

3,562,269

TRIS(m- OR p-AZIDOSULFONYL-PHENYL)-ISOCYANURATES

Henri Ulrich, Northford, Conn., assignor to The Upjohn Company, Kalamazoo, Mich., a corporation of Delaware

No Drawing. Filed Mar. 10, 1969, Ser. No. 805,824
Int. Cl. C07d *55/14*
U.S. Cl. 260—248 3 Claims

This invention is of a novel group of tris(m- or p-azidosulfonylphenyl)-isocyanurates optionally having halo

and/or alkyl substituents in the phenyl ring, one of the positions ortho in respect to azidosulfonyl being unsubstituted. Compounds of the invention are useful as blowing agents in high polymers, and as cross-linkers in photoresist systems and elastomers.

3,562,270
FLUORINATED 1,2,4-BENZOTRIAZINES

Theodor Wagner-Jauregg, Zofingen, Switzerland, and Egon Fitz, Dornbirn, Austria, assignors to Siegfried Aktiengesellschaft, Zofingen, Switzerland, a corporation of Switzerland

No Drawing. Filed Sept. 27, 1968, Ser. No. 763,394
Claims priority, application Switzerland, Sept. 27, 1967, 13,518/67
Int. Cl. C07d *55/10*
U.S. Cl. 260—249.5 **4 Claims**

This invention is directed to fluorinated 3-amino substituted 1,2,4-benzotriazine derivatives having pharmaceutical and particularly antiphlogistic activity, and to the method of producing same by reducing the corresponding fluorinated 3-amino substituted 1,2,4-benzotriazine-1-oxide derivatives.

3,562,271
3-CYCLOAMINO-1,2,8,9-TETRAAZAPHENALENES

Karl J. Doebel, Ossining, and John E. Francis, Pleasantville, N.Y., assignors to Geigy Chemical Corporation, Ardsley, N.Y., a corporation of New York

No Drawing. Continuation-in-part of application Ser. No. 718,227, Apr. 2, 1968, which is a continuation-in-part of applications Ser. No. 445,762, Apr. 5, 1965; Ser. No. 539,303, Apr. 1, 1966; and Ser. No. 583,980, Oct. 3, 1966. This application Mar. 24, 1969, Ser. No. 810,006
Int. Cl. C07d *51/04*
U.S. Cl. 260—250 **12 Claims**

3-cycloamino-1,2,8,9-tetraazaphenalenes optionally substituted in the 4, 5, 6, 7 and/or 9 positions and their salts are cardiovascular agents and can be prepared from the corresponding 1,2,8,9-tetraazaphenalenes. A representative embodiment is 3-N-piperidino-1,2,8,9-tetraazaphenalene.

3,562,272
PREPARATION OF 4-ARYL-2(1H)-QUINAZOLINONES

Hans Ott, Pfeffingen, Basel-Land, Switzerland, assignor to Sandoz-Wander, Inc., Hanover, N.J., a corporation of Delaware

No Drawing. Filed Apr. 15, 1969, Ser. No. 816,383
Int. Cl. C07d *51/48*
U.S. Cl. 260—251 **5 Claims**

The invention discloses preparation of 1-substituted-4-aryl-2(1H)-quinazolinones by subjecting their corresponding 1-substituted-4-aryl-quinazolin-2(1H)-thiones to hydrolysis in the presence of an alkali metal hydroxide at temperatures in the range of from 50° C. to 150° C.

3,562,273
TRIS (HYDROXYMETHYL)AMINOMETHANE THEOPHYLLINE ACETATE

Carlos Ferrer Salat, Jorge Ferrer Batlles, and Juan Colome Riera, Barcelona, Spain, assignors to Laboratorios Ferrer, S.L., Barcelona, Spain, a corporation of Spain

No Drawing. Filed Feb. 17, 1967, Ser. No. 616,780
Claims priority, application Spain, Feb. 17, 1966, 323,195
Int. Cl. C07d *57/52*
U.S. Cl. 260—253 **1 Claim**

The present invention relates to compositions of tris (hydroxymethyl) aminomethane with monocarboxylic aminated organic acids such as theophylline-acetic acid, thioctic acid, orotic acid and pangamic acid, the method of manufacturing the same, and the method of treating acidosis by administration of the same.

3,562,274
N-HETEROCYCLIC N,N'-DIGLYCIDYL COMPOUNDS

Juergen Habermeier, Allschwil, and Daniel Porret, Binningen, Switzerland, assignors to Ciba Limited, Basel, Switzerland, a company of Switzerland

No Drawing. Filed July 29, 1969, Ser. No. 845,889
Claims priority, application Switzerland, Aug. 13, 1968, 12,138/68
Int. Cl. C07d *51/20*
U.S. Cl. 260—257 **4 Claims**

New 5,5-disubstituted 1,3-diglycidyl-barbituric acids (1,3-diglycidyl-5,5-diethyl barbituric acid and 1,3-diglycidyl-5-ethyl-5-phenyl barbituric acid) are prepared by a reaction known per se of 5,5-disubstituted barbituric acids with epichlorhydrin in the presence of tertiary amines or quaternary ammonium salts and subsequent dehydrohalogenation with alkali. (The easy accessibility is surprising because the 5-unsubstituted barbituric acid can only be converted into a mono-glycidyl derivative even when treated with a large excess of epichlorhydrin.) The new diepoxides are as aa rule liquid viscous and can be cured with the conventional curing agents, such as dicarboxylic acid anhydrides or polyamines to form shaped articles with good mechanical and electrical properties.

3,562,275
HETEROCYCLIC N,N'-DIGLYCIDYL COMPOUNDS

Juergen Habermeier, Allschwil, and Daniel Porret, Binningen, Switzerland, assignors to Ciba Limited, Basel, Switzerland, a corporation of Switzerland

No Drawing. Filed July 24, 1969, Ser. No. 844,603
Claims priority, application Switzerland, Aug. 2, 1968, 11,641/68
Int. Cl. C07d *51/30*
U.S. Cl. 260—260 **4 Claims**

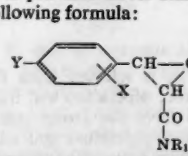
New 1,3-diglycidyl-5,5-dialkyl-5,6-dihydro-uracils (1,3-diglycidyl-5,5-dimethyl-5,6-dihydro-uracil and 1,3-diglycidyl - 5,5 - dimethyl-6-isopropyl-5,6-dihydro-uracil) are prepared by the reaction, known per se, of 5,5-dialkyl-5,6-dihydro-uracil with epichlorohydrin in the presence of a tertiary amine or of a quaternary ammonium salt, followed by dehydrohalogenation with alkali. (The easy access is surprising because the 5-unsubstituted dihydro-uracils can be converted only into the monoglycidyl derivatives even when a large excess of epichlorohydrin is used). As a rule, the new diepoxides are liquid-viscous and can be cured with the usual curing agents, such as dicarboxylic acid anhydrides or polyamines to form shaped articles with good mechanical and electrical properties.

3,562,276
DIARYLCYCLOPROPANE PIPERAZIDES POSSESSING ENHANCED ANTIHISTAMINIC, ANTISEROTONINIC AND ANTIEXUDATIVE ACTIVITY

Uberto Teotino and Davide Della Bella, Milan, Italy, assignors to Whitefin Holding S.A., Lugano, Switzerland

No Drawing. Filed Jan. 17, 1967, Ser. No. 609,754
Claims priority, application Great Britain, Jan. 26, 1966, 3,510/66
Int. Cl. C07d *51/64, 51/66, 51/68, 51/70, 51/72*
U.S. Cl. 260—268 **4 Claims**

There is provided novel diarylcyclopropane derivatives of the following formula:



wherein X, Y, X_1 and Y_1 are hydrogen, lower alkyl, halogen, trifluoromethyl or lower alkoxy; R_1 and R_2 taken together with the nitrogen atom to which they are at-

tached are piperidinyl, pyrrolidinyl, morpholinyl, simple or substituted piperazinyl where the substituent is a lower alkyl group; and the non-toxic, pharmaceutically acceptable acid addition salts thereof exhibiting antihistaminic, antiserotoninic and antiexudative activity.

3,562,277
KETONIC DERIVATIVES OF PHENYL PIPERAZINES

Holger Victor Hansen, Morris Plains, Jerome Marshall Cinnamon, North Caldwell, and William Oroshnik, Plainfield, N.J., assignors to Shulton, Inc., Clifton, N.J., a corporation of New Jersey

No Drawing. Filed Sept. 6, 1967, Ser. No. 665,724
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 **8 Claims**

The compounds of this invention are 1-(alkoxylated-o-amino- and o-nitro-phenyl)-ω-(4-aryl substituted phenyl-1-piperazinyl) ketones and related alkanol and alkane derivatives. The compounds of this invention are central nervous system depressants and may be used as sedatives or tranquilizers. These compounds are also useful as antipyretic agents.

3,562,278
1-[2-(2-SUBSTITUTED-3-INDOLYL)ETHYL]-4-SUBSTITUTED-PIPERAZINES

Sydney Archer, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y., a corporation of Delaware

No Drawing. Continuation-in-part of application Ser. No. 733,250, May 31, 1968, which is a continuation-in-part of application Ser. No. 634,899, May 1, 1967. This application Sept. 16, 1969, Ser. No. 858,499
Claims priority, application Canada, Apr. 16, 1968, 17,589
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 **17 Claims**

Novel 1-[2-(2-substituted - 3 - indolyl)ethyl]-4-substituted-piperazines having psychomotor depressant activity.

3,562,279
SUBSTITUTED 7,8-DIHYDRO - 6- METHOXY-6,14-ENDO(ETHENO OR ETHANO)MORPHIDE - 7-KETONES AND N-CYCLOALKYLMETHYL - 7,8-DIHYDRO - 6 - METHOXY-6,14-ENDO(ETHENO OR ETHANO)NORCODIDE-7-KETONES

John Johnston Brown, Pearl River, N.Y., Robert Allis Hardy, Jr., Ridgewood, N.J., and Carol Nora Roth, nee Carol Therese Nora, Houston, Tex., assignors to American Cyanamid Company, Stamford, Conn., a corporation of Maine

No Drawing. Continuation-in-part of application Ser. No. 671,123, Sept. 27, 1967, which is a continuation-in-part of application Ser. No. 634,116, Apr. 27, 1967. This application May 15, 1969, Ser. No. 825,029
Int. Cl. C07d *43/28*; A61k *27/00*
U.S. Cl. 260—285 **10 Claims**

This disclosure describes compounds of the class of substituted 7,8 - dihydro-6-methoxy-6,14-endo(etheno or ethano)morphide-7-ketones and N-cycloalkylmethyl-7,8-dihydro-6-methoxy - 6,14 - endo(etheno or ethano)norcodide-7-ketones which possess analgesic activity.

3,562,280
SUBSTITUTED 1,2,3,4-TETRAHYDROISOQUINOLINES

Willy Leimgruber, Montclair, and Fausto Eugenio Schenker, Bloomfield, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J., a corporation of New Jersey

No Drawing. Filed Aug. 30, 1967, Ser. No. 664,269
Int. Cl. C07d *35/10*
U.S. Cl. 260—289 **6 Claims**

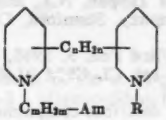
Novel pharmacologically active 8-(lower alkoxy)-1,2,3,4-tetrahydroisoquinolines, 8-(lower alkoxy)-1 and/or 2-(lower alkyl)-1,2,3,4-tetrahydroisoquinolines and intermediates therefor, are prepared utilizing, for example, 8-isoquinolinol as a starting material. The pharmacologically active compounds of the invention are useful as hypotensive agents.

3,562,281
BIS-PIPERIDYL-ALKANES

Lincoln Harvey Werner, Summit, and Robert Paul Mull, Florham Park, N.J., assignors to Ciba Corporation, Summit, N.J., a corporation of Delaware

No Drawing. Continuation-in-part of application Ser. No. 686,827, Nov. 30, 1967, which is a continuation-in-part of application Ser. No. 612,357, Jan. 30, 1967. This application June 26, 1969, Ser. No. 836,992
Int. Cl. C07d *29/36*
U.S. Cl. 260—293.4 **9 Claims**

Basically substituted bis-piperidyl-alkanes, e.g. those of the formula



n=1–7, m=2–7
Am=sec. or tert. amino group
R=H, aliphatic, araliphatic or aromatic radical

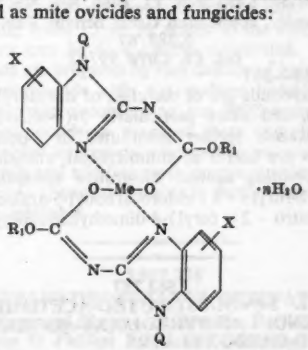
acyl derivatives, quaternaries and salts thereof are antibacterial and antiparasitic agents.

3,562,282
TRANSITION METAL COMPLEXES OF SUBSTITUTED 2 - BENZIMIDAZOLECARBAMIC ACID, ALKYL ESTERS AND THEIR PREPARATION

Hein L. Klopping, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del., a corporation of Delaware

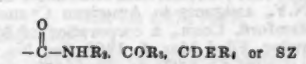
No Drawing. Continuation-in-part of abandoned application Ser. No. 721,061, Apr. 12, 1968, which is a continuation-in-part of abandoned application Ser. No. 629,900, Apr. 11, 1967, which in turn is a continuation-in-part of application Ser. No. 548,034, May 6, 1966. This application Mar. 5, 1969, Ser. No. 804,710
Int. Cl. C07d *49/38*
U.S. Cl. 260—299 **13 Claims**

Transition metal complexes of substituted 2-benzimidazolecarbamic acid, alkyl esters of the following formula are useful as mite ovicides and fungicides:



where

Q is



and X, R_1, R_2, R_3, R_4, Z, n and Me are as defined hereinafter.

An exemplary species of the general class is the complex: 1 - (butylcarbamoyl) - 2 - benzimidazolecarbamic acid, methyl ester 2:1 manganese complex.

3,562,283

1-OXO AND 1,1-DIOXO-3-ISOTHIAZOLONES

Sheldon N. Lewis, Willow Grove, and George A. Miller, Glenside, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa., a corporation of Delaware

No Drawing. Filed July 1, 1968, Ser. No. 741,257
Int. Cl. C07d *91/10*
U.S. Cl. 260—301 10 Claims

Novel compounds of the 1-oxo- and 1,1-dioxo-3-isothiazolone class of compounds which include 2-alkyl, 2-aryl, 2-carbamoyl and 4- and 5-alkyl and halo derivatives. These compounds are useful as pesticides.

3,562,284

2-(SUBSTITUTED) SULFONYL-5-TRIFLUOROMETHYL-1,3,4-THIADIAZOLES

Howard Newman, Monsey, N.Y., and Andrew Stephen Tomcufcik, Old Tappan, N.J., assignors to American Cyanamid Company, Stamford, Conn., a corporation of Maine

No Drawing. Filed Feb. 5, 1968, Ser. No. 702,825
Int. Cl. C07d *91/62*
U.S. Cl. 260—302 10 Claims

This disclosure describes compounds of the class of 2-(substituted)sulfonyl - 5-trifluoromethyl-1,3,4-thiadiazoles useful as antifungal agents.

3,562,285

ETHYL 3-(N-SUBSTITUTED-AMINO)-4H-PYRROLO [3,4-C]ISOTHIAZOLE-5(6H)-CARBOXYLATES

Shreekrishna Manmohan Gadekar, Trenton, and Bernard Dean Johnson, Montvale, N.J., and Elliott Cohen, Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn., a corporation of Maine

No Drawing. Filed Mar. 6, 1968, Ser. No. 710,779
Int. Cl. C07d *91/10, 91/12*
U.S. Cl. 260—306.8 6 Claims

This disclosure describes compounds of the class of ethyl 3 - (N - substituted - amino)-4H-pyrrolo[3,4-c]isothiazole - 5(6H) - carboxylates useful as antifungal agents and as central nervous system depressants.

3,562,286

NITROFURYL ISOXAZOLE DERIVATIVES

William Hoyle, Bramhall, and Graham Arton Howarth, Handforth, England, assignors to Geigy Chemical Corporation, Ardsley, N.Y., a corporation of New York

No Drawing. Filed Feb. 12, 1968, Ser. No. 704,570
Claims priority, application Great Britain, Feb. 15, 1967, 7,289/67
Int. Cl. C07d *99/02*
U.S. Cl. 260—307 13 Claims

The compounds are of the class of nitrofuryl isoxazole derivatives, and more particularly 3-(5-nitro-2-furyl)-5-amino isoxazole further substituted in 4-position. The compounds are useful as antimicrobial, anthelmintic and growth-promoting agents. Illustrative embodiments are 3-(5-nitro-2-furyl) - 4 - chlorocarbonyl-5-amino isoxazole and 3-(5-nitro - 2 - furyl)-4-dimethylcarbamoyl-5-amino isoxazole.

3,562,287

ETHYL 3-(N-SUBSTITUTED-ACETIMIDOYL-AMINO) - 4H-PYRROLO[3,4-c]ISOXAZOLE-5(6H)-CARBOXYLATES

Shreekrishna Manmohan Gadekar, Trenton, and Bernard Dean Johnson, Montvale, N.J., and Elliott Cohen, Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn., a corporation of Maine

No Drawing. Filed Mar. 6, 1968, Ser. No. 710,770
Int. Cl. C07d *85/22, 85/40*
U.S. Cl. 260—307 9 Claims

This disclosure describes compounds of the class of ethyl 3-(N-substituted-acetimidoylamino)-4H-pyrrolo[3,4-c]isoxazole-5(6H)-carboxylates useful as diuretic agents.

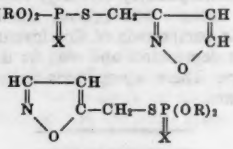
3,562,288

HETEROCYCLIC PHOSPHORIC ACID ESTERS, THEIR MANUFACTURE AND USE AS PESTICIDES

Otto Scherer, Bad Soden, Taunus, and Gerhard Stähler, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany, a corporation of Germany

No Drawing. Filed July 16, 1969, Ser. No. 842,330
Claims priority, application Germany, July 20, 1968, P 17 70 936.3
Int. Cl. C07d *85/22*
U.S. Cl. 260—307 7 Claims

Novel heterocyclic phosphoric acid esters are described as well as their manufacture and use as pesticides. The novel compounds correspond to the general Formula I or II.



(I)

(II)

in which R stands for a methyl or ethyl group and X stands for oxygen or sulfur.

3,562,289

CHROMATOGRAPHIC SEPARATION PROCESS BY MEANS OF CELLULOSE CRYSTALLITE AGGREGATES DERIVATIVES

Orlando A. Battista, Yardley, and Charles J. Boone, Easton, Pa., assignors to FMC Corporation, Philadelphia, Pa., a corporation of Delaware

No Drawing. Continuation-in-part of applications Ser. No. 101,677, Apr. 10, 1961, and Ser. No. 167,904, Jan. 22, 1962. This application May 12, 1965, Ser. No. 455,344
Int. Cl. C07c *99/12*; C07d *49/36*
U.S. Cl. 260—309 5 Claims

Water-insoluble derivatives of cellulose crystallite aggregates having an average level-off D.P. of 15 to 375 and having ion-exchange functional groups are used in separating alkaloids, amino group-containing compounds, lipids, organic acids, racemates and sugars from mixtures containing the respective substances or compounds. A solution of a mixture containing the respective substances is brought into contact with the cellulose crystallite aggregates derivative and the substances adsorbed by the derivative, subsequently recovered by elution.

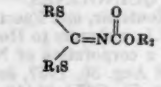
3,562,290

PROCESS FOR MAKING 2-BENZIMIDAZOLE-CARBAMIC ACID ALKYL ESTERS

Maged Mohamed Fawzi, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del., a corporation of Delaware

No Drawing. Filed Nov. 7, 1967, Ser. No. 681,102
Int. Cl. C07d *49/38*
U.S. Cl. 260—309.2 5 Claims

Compounds of the formula:



where R, R_1 and R_2 are as defined hereinafter are useful as chemical intermediates. When reacted with o-phenyl-

enediamines, they form 2-benzimidazolecarbamic acid alkyl esters, which compounds are useful as fungicides.

Exemplary of the compounds is methyl bis(methyl) methyleneaminoformate.

3,562,291

INSTANTANEOUS FRICTION REDUCING ADDITIVE FOR POLYETHYLENE, POLYPROPYLENE AND THEIR CO-POLYMERS

Hans Harald Lutzmann, Cleveland, Ohio, and Nicholas M. Molnar, New York, N.Y., assignors to Fine Organics, Inc., Lodi, N.J., a corporation of New York

No Drawing. Filed July 24, 1968, Ser. No. 754,157

Int. Cl. C08f *45/44*

U.S. Cl. 260—32.6 **2 Claims**

Fatty acid amides of which 70 to 90 percent by weight is erucamide and 10 to 30 percent is laurylamide, are added to polyolefin resins in the proportion of approximately 0.05% to 0.20% thereof by weight to impart substantially instantaneous slip to films and the like extruded from melts of the resin.

3,562,292

N-SUBSTITUTED PHTHALIMIDES

Ferdinand Grewe, Burscheid, Gerhard Schrader, Wuppertal-Cronenberg, Helmut Kaspers, Leverkusen, and Werner Meiser, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany, a corporation of Germany

No Drawing. Filed May 25, 1967, Ser. No. 641,125

Claims priority, application Germany, May 31, 1966, F 49,345

Int. Cl. C07d *27/52*

U.S. Cl. 260—326 **5 Claims**

N-[unsubstituted- and (halo, lower alkyl, lower alkoxy, lower alkylmercapto and/or hydroxy) substituted-aromatic, cycloaliphatic and aliphatic] phthalimides which possess fungicidal properties and which may be prepared by conventional procedures.

3,562,293

2-PHENYL-3-(3-PYRROLIN-1-YL)-PROPIOPHENONES

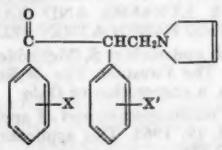
Robert Bruce Moffett, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich., a corporation of Delaware

No Drawing. Filed July 25, 1968, Ser. No. 747,483

Int. Cl. C07d *27/14*

U.S. Cl. 260—326.5 **3 Claims**

This invention relates to novel 2-phenyl-3-(3-pyrrolin-1-yl)-propiophenones; it is inclusive of the free base and acid addition salt forms of the compounds embraced by the formula



I

wherein X and X' are selected from the group consisting of hydrogen, lower-alkyl, fluorine, chlorine and bromine.

As used in this specification, the term "lower-alkyl" means alkyl of from one through four carbon atoms, e.g., methyl, ethyl, propyl, butyl and the isomeric forms thereof.

3,562,294

INDOLYL-2-AMINO-2-METHYLPROPANONES

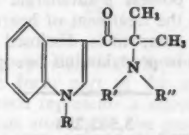
Robert F. Parcel and Joseph P. Sanchez, Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich., a corporation of Michigan

No Drawing. Filed Aug. 13, 1968, Ser. No. 752,167

Int. Cl. C07d *27/56*

U.S. Cl. 260—326.15 **8 Claims**

Indolyl-2-amino-2-methylpropanone free base (I) and acid addition salt compounds



I

are prepared

(1) by rearrangement of the corresponding 1-alkyl-N-{[2-methyl-1-(indol-3 - yl)propylidene]amino}quaternary ammonium salt,

(2) by reduction of corresponding 2-azido-1-indolyl-2-methylpropanone,

(3) by alkylation of the indole nitrogen or the 2-amino group of a corresponding des-N-alkylpropanone, or

(4) by amination of the corresponding 2-halo-1-indolyl-2-methylpropanone; where R is hydrogen, methyl, ethyl or allyl and R' and R'' represent hydrogen, methyl or ethyl. The compounds possess pharmacological properties and are useful psychotropic agents for treating hyper-emotionality and hyper-irritability.

3,562,295

MACROCYCLIC POLYETHER COMPOUNDS AND IONIC COMPLEXES THEREOF

Charles J. Pedersen, Salem, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del., a corporation of Delaware

No Drawing. Filed Dec. 18, 1968, Ser. No. 784,936

Int. Cl. C07d *19/00*

U.S. Cl. 260—338 **12 Claims**

Macrocyclic polyether "crown" compounds consisting of oxygen atoms joined to adjoining oxygen atoms by chains of from 2 to 3 carbon atoms to form a polyether ring having from 15 to 30 atoms in the ring. Ring carbon atoms can be C_1-C_4 alkyl substituted. The crown compounds are prepared by ring closure of halo-polyether-alcohol compounds with, e.g., sodium hydride or potassium t-butoxide according to the Williamson synthesis. Crown compounds so prepared form complexes with a wide variety of ionic metal compounds, especially those of alkali metals and alkaline earth metals, making it possible to use certain chemical reagents in media wherein they are normally insoluble.

3,562,296

TETRAHYDROPYRANYL DERIVATIVES

Paul R. Stapp and Clarence R. Bresson, Bartlesville, Okla., assignors to Phillips Petroleum Company, a corporation of Delaware

No Drawing. Filed Nov. 15, 1967, Ser. No. 683,154

Int. Cl. C07d *7/04*

U.S. Cl. 260—345.1 **5 Claims**

Aromatic compounds, such as, for example, benzene and naphthalene, are reacted with halotetrahydropyrans in the presence of a Lewis acid alkylation catalyst such as, for example, aluminum chloride, to yield aryl-tetrahydropyrans.

3,562,297

ALKANOLAMINE DERIVATIVES

Ralph Howe and Leslie Harold Smith, Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England, a corporation of Great Britain

No Drawing. Filed Oct. 16, 1967, Ser. No. 675,295
Claims priority, application England, Nov. 3, 1966, 49,368/66
Int. Cl. C07c *103/30*
U.S. Cl. 260—347.3 **5 Claims**

The disclosure relates to 1-acylaminophenoxy-3-amino-2-propanol derivatives, processes for their manufacture and pharmaceutical compositions containing them. The said compounds possess β-adrenergic blocking activity and are useful in the treatment of heart diseases. Representative of the compounds disclosed is 1-(4-propionamidophenoxy)-3-isopropylamino-2-propanol.

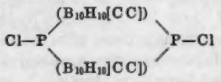
3,562,298

DIMERIC AZIDOPHOSPHA (III)-CARBORANES

Roy P. Alexander, Killingworth, and Hansjuergen A. Schroeder, Hamden, Conn., assignors to Olin Corporation, a corporation of Virginia

Continuation-in-part of applications Ser. No. 323,278 and Ser. No. 323,416, both Nov. 13, 1963. This application Oct. 9, 1967, Ser. No. 678,769
Int. Cl. C07c *117/00;* **C07d** *107/02*
U.S. Cl. 260—349 **2 Claims**

Dimeric azidophospha (III)-carboranes are prepared by reacting a dimeric halophospha (III)-carborane, such as:



with an alkali metal azide such as sodium azide in the presence of an inorganic liquid and at a temperature ranging from about −20° C. to about +80° C. The dimeric azidophospha (III)-carboranes can be condensed with a diphosphine to yield valuable polymeric materials which, when compounded with inert mineral fillers and pressure molded, are suitable for use in high pressure and high temperature applications.

3,562,299

PROCESS FOR PREPARING ANTHRAQUINONE DYESTUFFS

Edwin Dennis Harvey, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England, a corporation of Great Britain

No Drawing. Filed June 30, 1967, Ser. No. 650,261
Claims priority, application Great Britain, July 11, 1966, 30,972/66
Int. Cl. C09b *1/06, 1/22, 1/50*
U.S. Cl. 260—371 **3 Claims**

An improved process for the manufacture of anthraquinone compounds containing hydroxymethyl groups which comprises reacting the corresponding compounds containing sulphonic acid groups with formaldehyde and a reducing agent in an alkaline medium.

3,562,300

LIQUID NEOALKYLPOLYOL ESTERS OF MIXTURES OF NEO- AND STRAIGHT OR BRANCHED CHAIN ALKANOIC ACIDS AND THEIR PREPARATION

Tai S. Chao, Homewood, Ill., and Manley Kjonaas, Hammond, Ind., assignors to Sinclair Research, Inc., New York, N.Y., a corporation of Delaware

No Drawing. Filed Oct. 9, 1967, Ser. No. 673,932
Int. Cl. C07c *53/00, 53/22*
U.S. Cl. 260—398 **16 Claims**

Neoalkylpolyol esters of mixtures of straight chain fatty acids or branched chain fatty acids which are not neo acids, and neoalkyl fatty acids are prepared by a novel process which results in a product having superior low temperature properties and oxidation stability. The novel process of this invention comprises partially esterifying a neoalkylpolyol with a mixture of straight chain or branched chain carboxylic acids and a neoalkyl fatty acid, removing unreacted acid from the mixture before the esterification is complete, and adding straight or branched chain fatty acid sufficient to complete the esterification.

3,562,301

OIL REVERSION

Frederick H. Fryer and George B. Crump, Indianapolis, Ind., assignors to Standard Brands Incorporated, New York, N.Y., a corporation of Delaware

No Drawing. Continuation-in-part of application Ser. No. 370,675, May 27, 1964. This application Sept. 4, 1968, Ser. No. 757,450
Int. Cl. C11b *3/04, 5/00*
U.S. Cl. 260—398.5 **10 Claims**

The invention relates to a method of refining edible vegetable and marine oils. Vegetable and marine oils tend to revert in flavor and odor on storage. Treating such oils with small amounts of hydrogen chloride under substantially anhydrous conditions substantially prevents the oils from undergoing reversion on storage. Also, when oils which have reverted are treated with small amounts of hydrogen chloride under substantially anhydrous conditions the original bland flavor of the oils is restored.

3,562,302

PREPARATION OF FATTY ACID AMIDES FROM NITRO-NITROSOALKANES AND NITROALKANONE OXIMES

Alan F. Ellis, Murrysville, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa., a corporation of Delaware

No Drawing. Filed Dec. 9, 1968, Ser. No. 782,430
Int. Cl. C09f *7/00, 7/08*
U.S. Cl. 260—404 **10 Claims**

Fatty acid amides, such as valeramide, are prepared by the reaction of a 1-nitro-2-nitrosoalkane or a 1-nitroalkanone-2 oxime with an anhydrous mineral acid, such as sulfuric or phosphoric acid, at intermediate temperatures of, for example, about 70° C. for relatively short contact times. The lower fatty acids, such as acetic acid, are useful as solvent mediums.

3,562,303

PROCESS OF INCREASING THE GREEN STRENGTH OF HIGH-CIS POLYISOPRENE RUBBERS AND FACILITATING THE FABRICATION THEREOF

Floyd M. Smith and Robert S. McFadden, Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio, a corporation of Ohio

No Drawing. Continuation-in-part of application Ser. No. 498,096, Oct. 19, 1965. This application Feb. 8, 1968, Ser. No. 703,886
Int. Cl. C08c *11/18*
U.S. Cl. 260—41.5 **6 Claims**

A rubbery high-cis polymer or copolymer of isoprene is compounded with from about 0.1 to 0.3 of the amount of sulfur, and from about 0.1 to about 0.5 of the amount of accelerator, normally requisite to effect vulcanization of the polymer or copolymer. The mixture is then briefly masticated at temperatures on the order of 275–350° F.,

cooled to temperatures below the vulcanizing range, and compounded at this lower temperature with sufficient additional vulcanizing agents to effect vulcanization at conventional vulcanizing temperature. The re-compounded material is then extruded, calendered or otherwise formed into sheets, tire tread plies, coated bead wires, coated cord plies or other similar components which are build into assemblies such as tires etc. and finally vulcanized at ordinary vulcanizing temperatures. The rubbery material, after the initial mastication, has greatly enhanced green strength which greatly facilitates the forming and building operations.

3,562,304

ABLATIVE COMPOSITION OF MATTER

Jerry Tucker, Waco, Tex., assignor to North American Rockwell Corporation

No Drawing. Filed Feb. 13, 1968, Ser. No. 705,030

Int. Cl. C08c *11/16*

U.S. Cl. 260—41.5 9 Claims

A thermal insulating ablative composition comprising an ethylene propylene terpolymer, a reactive terminated polybutadiene polymer, asbestos, a curing agent, and other optional flame retardants.

3,562,305

STABILIZED COMPOSITIONS OF ORGANOTIN-(CARBOXYORGANO MERCAPTIDES) AND DIORGANOTIN BIS(CARBOXYLATES) AND THE PREPARATION THEREOF

Samuel Hoch, Brooklyn, N.Y., assignor to Tenneco Chemicals, Inc., a corporation of Delaware

No Drawing. Original application Oct. 5, 1967, Ser. No. 673,007. Divided and this application Sept. 9, 1969, Ser. No. 856,486

Int. Cl. C07f *7/22*; C08f *45/62*

U.S. Cl. 260—429.7 15 Claims

A stabilizer for vinyl halide resin compositions comprises an organotin mercaptoacid ester, such as dibutyltin bis-(isooctyl thioglycolate), and a small amount of an organotin carboxylate, such as dibutyltin dipelargonate or dibutyltin bis-(monoisooctyl maleate). These stabilizers, which, unlike the untreated organotin mercaptoacid esters, do not decompose rapidly on standing at room temperature, are at least as effective as stabilizers for vinyl halide resin compositions as the organotin mercaptoacid esters.

3,562,306

PREPARATION OF ZINC DIHYDROCARBON-SUBSTITUTED DITHIOPHOSPHATE

Eli W. Blaha and Roger W. Watson, Highland, Ind., assignors to Standard Oil Company, Chicago, Ill., a corporation of Indiana

No Drawing. Filed Jan. 16, 1969, Ser. No. 791,772

Int. Cl. C07f *3/06*

U.S. Cl. 260—429.9 8 Claims

Zinc dihydrocarbon-substituted dithiophosphates, and in particular zinc diaryl dithiophosphates, are prepared by neutralizing the dihydrocarbon-substituted dithiophosphoric acid with zinc oxide in the presence of a neutralization promoter which is a zinc salt such as zinc nitrate, zinc chloride, zinc sulphate, and the like; the zinc salt may be added as such or formed in situ by the addition of nitric acid, hydrochloric acid or sulfuric acid to the mixture of the dihydrocarbyl dithiophosphoric and sufficient zinc oxide to neutralize the dithiophosphoric acid and to form promoting amounts of the inorganic zinc salt.

3,562,307

COBALT ADDITION COMPOUNDS AND PROCESS FOR PRODUCING THE SAME

Giacomo Costa, Via Virgilio 17/1, and Giovanni Mestroni, Strada di Guardiella 10/1, both of Trieste, Italy

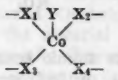
No Drawing. Filed Feb. 16, 1968, Ser. No. 705,891

Claims priority, application Italy, Feb. 17, 1967, 12,762/67

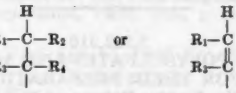
Int. Cl. C07j *15/06*

U.S. Cl. 260—439 7 Claims

Organometallic tetradentate-complexes of cobalt having the formula



wherein X_1, X_2, X_3 and X_4, which may be the same or different and which form part of the same or different chelating agent, each represents a nitrogen, oxygen, sulphur or phosphorus atom, with the proviso that X_1, X_2, X_3 and X_4 cannot simultaneously represent four nitrogen atoms, and Y is either:



wherein R_1, R_2, R_3 and R_4, which may be the same or different, each represents a substituted or unsubstituted, saturated or unsaturated hydrocarbon radical having from 1 to 8 carbon atoms, a halogen or hydrogen atom, or a hydroxyl, ester or cyanide group are disclosed as well as a novel process for preparing same. These complexes are useful as catalysts in organic reactions such as oxidations, oxoreactions and nitrosations.

3,562,308

PROCESS FOR PRODUCING ORGANOMETALLIC CHELATED COBALT COMPLEXES

Giacomo Costa, Via Virgilio 17/1, and Giovanni Mestroni, Strada di Guardiella 10/1, both of Trieste, Italy

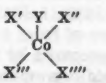
No Drawing. Filed July 22, 1968, Ser. No. 746,295

Claims priority, application Italy, July 25, 1967, 18,755/67

Int. Cl. C07j *15/06*

U.S. Cl. 260—439 5 Claims

Process for preparing organometallic tetradentate complexes of cobalt by reacting a tetradentate cobalt complex having the formula:



wherein X', X'', X''' and X'''', which may be the same or different, each represents an oxygen, nitrogen, phosphorus or sulphur atom with the proviso that all four are not nitrogen atoms, Y represents a hydrogen atom or an alkali metal atom with a hydrocarbon polyhalide, there being at least two molecules of the reactant cobalt complex for each molecule of the hydrocarbon polyhalide, so as to produce the desired polynuclear organometallic compound is disclosed. These compounds serve as useful intermediates for making effective organic cobalt catalysts.

3,562,309

NITROFORM SALT OF CERTAIN METALS

John R. Lovett, Edison, N.J., assignor to Esso Research and Engineering Company, a corporation of Delaware

No Drawing. Filed Nov. 30, 1960, Ser. No. 72,799

Int. Cl. C07f *5/02*, *5/06*

U.S. Cl. 260—448 14 Claims

1. A nitroform salt of a metal selected from the group consisting of lithium, beryllium, boron, magnesium and aluminum.

5. Alkyl aluminum salt of nitroform.

7. Process for preparing a light nitroform salt of a metal selected from the group consisting of lithium, beryllium, boron, magnesium and aluminum, which comprises reacting an organo-metallic compound of the metal with a nitroform reactant having the formula:

wherein X represents atomic constituents selected from the group consisting of hydrogen, bromine, chlorine, iodine, and sulfate, the organo radical in the organo-metallic compound of the metal being selected from the group consisting of alkyl, phenyl, alkyl-aryl, naphthyl and cyclo-alkyl hydrocarbon radicals, and recovering a resulting nitroform salt of the metal.

3,562,310
NOVEL POLYSULFATES AND METHODS FOR THEIR PREPARATION

Louis G. Anello, Basking Ridge, and Richard F. Sweeney, Randolph Township, Morris County, N.J., assignors to Allied Chemical Corporation, New York, N.Y., a corporation of New York

No Drawing. Filed Aug. 11, 1967, Ser. No. 659,867
Int. Cl. C07c *141/02, 141/06*
U.S. Cl. 260—457 10 Claims

Polysulfate compounds of the formula:

$$[R(CH_2)_m]_2(OSO_2)_pO$$

wherein R is

(a) a haloalkyl group having from 1 to 20 carbon atoms in which the terminal carbon atom is substituted with members selected from the group consisting of fluorine, chlorine, bromine and hydrogen atoms and each carbon atom other than the terminal carbon atom, when present, is substituted with halogen atoms selected from the group consisting of fluorine and chlorine, or

(b) a perhalocycloalkyl group having from 3 to 6 carbon atoms in which each halogen atom is a member selected from the group consisting of fluorine and chlorine,

with the proviso that at least one fluorine atom is attached to each carbon atom in the haloalkyl or perhalocycloalkyl group; m is an integer of from 1 to 3 and p is an integer of from 2 to 6, are prepared by reacting a fluoroalkyl or fluorocycloalkyl iodide corresponding to the general formula:

$$R(CH_2)_mI$$

wherein R and m have the afore-stated meanings, with sulfur trioxide in at least about the stoichiometric proportions for the reaction.

The novel polysulfates may be readily hydrolyzed to the corresponding alcohols using a dilute mineral acid. Corresponding monosulfates known to the prior art may not be hydrolyzed to the corresponding alcohols in this manner but require the use of highly corrosive concentrated mineral acids or the use of alkaline conditions to carry out the hydrolysis.

The novel polysulfates may also be directly converted to the corresponding fluoroalkyl or fluorocycloalkyl acrylate or methacrylate compounds by contacting the polysulfates with acrylic or methacrylic acid at temperatures from about 80 C. to about the boiling point of the reaction mixture for a period of about 1–24 hours. The corresponding monosulfates may not be similarly directly esterified to the acrylate or methacrylate compounds.

3,562,311
POLYFUNCTIONAL DIMERS

James D. McClure, San Francisco, Calif., assignor to Shell Oil Company, New York, N.Y., a Delaware corporation

No Drawing. Filed Feb. 18, 1963, Ser. No. 259,428
Int. Cl. C07c *121/20*
U.S. Cl. 260—465.8 8 Claims

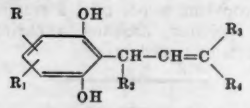
2-methyleneglutaronitrile is prepared via tertiary phosphine catalyzed dimerization of acrylonitrile.

3,562,312
MANUFACTURE OF 2-SUBSTITUTED RESORCINOL DERIVATIVES

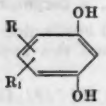
Albert Eschenmoser, 9 Bergstrasse, Kusnacht, Switzerland, and Theodor Petrzilka, 6 Rigistrasse, Erlenbach, Switzerland

No Drawing. Filed Oct. 24, 1967, Ser. No. 677,720
Claims priority, application Switzerland, Nov. 4, 1966, 15,965/66
Int. Cl. C07c *39/10, 65/04, 69/88*
U.S. Cl. 260—473 7 Claims

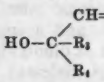
Preparation of 2-substituted resorcinol derivatives of the general formula



where R is hydrogen, carboxyl or carbalkoxy, R_1 is hydrogen or alkyl, R_2 is hydrogen or alkyl, and R_3 and R_4 each is hydrogen, alkyl, alkenyl or alkynyl or in which two of the groups R_2, R_3 and R_4 are linked together to form a 5- or 6-membered ring, by condensing a resorcinol of the general formula



wherein R and R_1 have the same meanings given above, with an unsaturated allyl alcohol of the general formula



wherein R_2, R_3 and R_4 have the same meanings given above, in the presence of an N,N-dimethylformamide dialkyl acetal.

3,562,313
INTERMEDIATES FOR BENZOIC ACID LACTONES

Alexander D. Cross, % Syntex International A.T.S.A., Apartado Postal M–10063, Mexico City 1, Mexico, and John H. Fried and Ian T. Harrison, both % Syntex Research, 3401 Hillview Ave., Palo Alto, Calif. 94304

No Drawing. Continuation-in-part of application Ser. No. 560,851, June 27, 1966. This application May 6, 1968, Ser. No. 727,085
Int. Cl. C07c *65/02, 69/76*
U.S. Cl. 260—473 3 Claims

Novel benzoic acid ketones and hydroxy ketones which are intermediates of benzoic acid lactones useful as estrogenic and anabolic agents.

3,562,314
PRODUCTION OF 2,7-OCTADIENYL CARBOXYLATES

Thomas M. Shryne, 60 Los Cerros, Walnut Creek, Calif. 94598

No Drawing. Filed Dec. 27, 1966, Ser. No. 604,592
Int. Cl. C07c *69/14, 69/44, 69/54*
U.S. Cl. 260—485 7 Claims

2,7-octadienyl esters of organic mono- and dicarboxylic acids are produced by a dimerization-addition reaction of

carboxylic acid with 1,3-butadiene in the presence of a palladium carboxylate, preferably palladium acetate, as the catalyst and in the absence of catalyst promoter. The 2,7-octadienyl carboxylate monoesters are useful as boundary modifiers in lubricating oil compositions and the diesters are useful as plasticizers for resins.

3,562,315

HYDROUS REACTION OF ORGANIC HALIDES AND CARBOXYLIC ACID AMIDES

Jane P. Cookson, Marshall Township, Allegheny County, and Joseph S. Matthews, O'Hara Township, Allegheny County, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa., a corporation of Delaware

No Drawing. Filed May 25, 1967, Ser. No. 641,151

Int. Cl. C07c *67/02*

U.S. Cl. 260—493 **8 Claims**

A method of making an alcohol and its carboxylic acid ester from the reaction of an organic halide, a carboxylic acid amide and water at an elevated temperature.

3,562,316

PROCESS FOR THE CYCLIZATION OF UNSATURATED ORGANIC COMPOUNDS

Marc Juiia, Paris, France, assignor to Rhone-Poulenc S.A., Paris, France, a French body corporate

No Drawing. Filed June 5, 1967, Ser. No. 643,389

Claims priority, application France, June 8, 1966, 64,698

Int. Cl. C07c *5/00, 43/20, 67/04*

U. S. Cl. 260—497 **6 Claims**

Organic compounds having two carbon-carbon double bonds in the 1,5- or 1,6-position are cyclized by treatment with a mercuric compound and a proton acid or Lewis acid.

3,562,317

PENTACYCLOALKANECARBOXYLIC ACIDS

George L. Dunn, Wayne, and John R. E. Hoover, Glenside, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa., a corporation of Pennsylvania

No Drawing. Application Jan. 6, 1966, Ser. No. 519,021, which is a continuation-in-part of application Ser. No. 442,475, Mar. 24 1965. Divided and this application July 24, 1968, Ser. No. 747,085

Int. Cl. C07c *61/12*

U.S. Cl. 260—514 **4 Claims**

Pentacyclo[4.2.0.$0^{2,5}$.$0^{3,8}$.$0^{4,7}$]octanes, pentacyclo

[5.2.0.$0^{2,5}$.$0^{3,9}$.$0^{4,8}$]

nonanes and pentacyclo[6.2.0.$0^{2,6}$.$0^{3,10}$.$0^{5,9}$]decanes, substituted with an amino or aminomethyl group, are prepared from known simpler substances, including pentacycloalkanecarboxylic acids. The products are antiviral agents.

3,562,318

CATALYTIC OXIDATION PROCESS OF MONO-ARYL COMPOUNDS

Bruno J. Barone, Houston, and Louis J. Croce, Seabrook, Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex., a corporation of Delaware

No Drawing. Continuation-in-part of application Ser. No. 598,140, Nov. 10, 1966. This application Dec. 1, 1966, Ser. No. 598,172

Int. Cl. C07c *63/02*

U.S. Cl. 260—524 **11 Claims**

Oxidation of aromatic compounds such as p-xylene to acids such as terephthalic acid under controlled reaction conditions and in the presence of a methylenic ketone or aldehyde and as a catalyst a combination of cobalt and at least one ion of a metallic element having a valence of greater than +1 but having only a single valence.

3,562,319

OXIDATION OF CELLULOSIC MATERIAL TO PRODUCE ORGANIC ACIDS

David L. Brink, Berkeley, Calif., assignor to The Regents of the University of California

Filed June 20, 1966, Ser. No. 558,747

Int. Cl. C07c *51/18*

U.S. Cl. 260—528 **8 Claims**

Cellulosic material is oxidized under elevated pressure and temperature, by oxygen in an aqueous medium under acidic conditions inherently resulting from the acids liberated from the material. Organic acids are thus directly produced from the material by such oxidation. Wood residue is economically disposed of by the process without creating smog or smoke problems.

3,562,320

PROCESS FOR PRODUCING METHACRYLIC ACID

George E. Woodward, Freeport, Tex., and Richard W. Hein, Ridgefield, Conn.; said Hein assignor to Escambia Chemical Corporation, Pace, Fla., a corporation of Delaware

No Drawing. Filed Apr. 25, 1967, Ser. No. 633,413

Int. Cl. C07c *57/04*

U.S. Cl. 260—531 **12 Claims**

Methacrylic acid is produced by dehydrating alpha-hydroxyisobutyric acid in the liquid phase under the influence of heat and a catalyst which is a metal salt of alpha-hydroxyisobutyric acid. The process is desirably carried out at a temperature in excess of about 180° C., while maintaining the alpha-hydroxyisobutyric acid in the liquid state. The metal salt of alpha-hydroxyisobutyric acid is obtained by reacting the acid with a metal hydroxide or metal salt which will react with the alpha-hydroxyisobutyric acid to produce the corresponding metal salt of the acid. Desirably, the process is carried out in the presence of a polymerization inhibitor for the methacrylic acid which is formed during the process.

3,562,321

PREPARATION OF OXYGENATED HYDROCARBONS

Walter L. Borkowski and John J. van Venrooy, both of Media, Pa., assignors to Sun Oil Company, Philadelphia, Pa., a corporation of New Jersey

Filed Oct. 10, 1961, Ser. No. 144,221

Int. Cl. C07c *51/00, 29/00*

U.S. Cl. 260—533 **6 Claims**

This invention relates to a process for producing oxygenated hydrocarbons such as alcohols, glycols, aldehydes, acids and the like by reaction of hydrocarbons with ferric chloride to form chlorohydrocarbons and hydrolysis of the chlorohydrocarbons.

3,562,322

PREPARATION OF OXALIC ACID

Jacques Boichard, Bernard Pierre Brossard, Michel Louis Marie Joseph Gay, and Raymond Marc Clement Janin, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France, a French body corporate

Filed June 24, 1966, Ser. No. 560,151

Claims priority, application France, July 1, 1965, 23,136; Dec. 6, 1965, 41,078

Int. Cl. C07c *51/32*

U.S. Cl. 260—533 **7 Claims**

Oxalic acid is prepared from ethylene by oxidation with nitric acid. The concentration of the nitric acid is maintained at least 16% throughout the reaction which is effected in the presence of a palladium or mercury catalyst.

3,562,323
ALKANESULFONYL CHLORIDE PROCESS
Shigeto Suzuki, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif., a corporation of Delaware
Filed Oct. 3, 1966, Ser. No. 583,676
Int. Cl. C07c *143/70, 149/06*
U.S. Cl. 260—543 15 Claims

Alkanesulfonyl chlorides are produced in an integrated process in which: (a) a lower t-alkylthiol is reacted with an alkene containing non-quaternary carbon-carbon double bond unsaturation yielding a t-alkyl-alkyl sulfide; (b) the sulfide is oxidized with chlorine and water yielding the alkanesulfonyl chloride and a lower tertiary alkyl chloride; and (c) the t-alkylthiol is regenerated and recycled to the process by reacting the chloride with hydrogen sulfide in a vapor phase reaction catalyzed by phosphoric or sulfuric acid disposed upon an inert solid inorganic oxide.

3,562,324
CHLOROCARBORANES AND A METHOD FOR THE PRODUCTION THEREOF
Theodore L. Heying, North Haven, and Hansjuergen A. Schroeder, Hamden, Conn., assignors to Olin Corporation, a corporation of Virginia
Continuation-in-part of application Ser. No. 283,488, May 27, 1963. This application Nov. 27, 1964, Ser. No. 414,947
Int. Cl. C07f *5/02*
U.S. Cl. 260—543 17 Claims

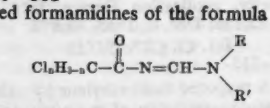
Ortho, meta and para chlorocarboranes are prepared by reacting chlorine at a temperature of about —20° C. to about +140° C. with ortho, meta, or para carborane in the presence of a chlorinated hydrocarbon solvent. The chlorinated carboranes of this invention are useful in the preparation of polymers suitable as fuels in solid propellant compositions.

3,562,325
2-[N,N-(AMINO LOWER ALKYL)-(ARYLSULFONYL)]-AMINO BENZOPHENONES AND DERIVATIVES
Rodney Ian Fryer, North Caldwell, Earl Reeder, Nutley, and Leo Henryk Sternbach, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J., a corporation of New Jersey
No Drawing. Original application Ser. No. Sept. 22, 1965, Ser. No. 489,381, now Patent No. 3,431,304. Divided and this application Sept. 10, 1968, Ser. No. 758,683
Int. Cl. C07c *143/78*
U.S. Cl. 260—556 8 Claims

Aniline derivatives having a leaving group on the nitrogen atom are described. Preferred compounds also contain an alkyl amino alkyl group on the foresaid nitrogen atom. The leaving group is preferably a tosyl group. These compounds are useful as intermediates in the preparation of benzophenone compounds having valuable therapeutic properties.

3,562,326
SUBSTITUTED FORMAMIDINES
Angelo John Speziale, Creve Coeur, and Lowell R. Smith, Chesterfield, Mo., assignors to Monsanto Company, St. Louis, Mo., a corporation of Delaware
No Drawing. Filed June 17, 1968, Ser. No. 737,345
Int. Cl. C07d *103/44*
U.S. Cl. 260—561 7 Claims

Substituted formamidines of the formula



wherein *n* is a whole number from 1 to 3, inclusive, wherein R and R' are like or unlike and are aliphatic containing from 1 to 4 carbon atoms, inclusive, and containing from 0 to 3 chloro substituents, inclusive. R' can also be phenyl or monochloro- or dichloro substituted phenyl. The compounds exhibit pre-emergent phytocidal activity.

3,562,327
PRODUCTION OF ALKYLENE GLYCOL DI-(ACRYLAMIDE-N-METHYL)ETHERS
Harro Petersen, Frankenthal, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), and Rheinland-Pfalz, Germany
No Drawing. Filed Apr. 16, 1969, Ser. No. 816,803
Claims priority, application Germany, Apr. 19, 1968, P 17 68 240.5
Int. Cl. C07c *103/30*
U.S. Cl. 260—561 7 Claims

Production of alkylene glycol di-(acrylamide-N-methyl) ethers by reaction of acrylamide-N-methylol compounds with dialcohols in the presence of phthalic acid. The products are valuable starting materials for the production of plastics, resins and plasticizers.

3,562,328
PROCESS FOR THE PRODUCTION OF CYCLOHEXANONE OXIME
Eizo Yasui, Takeo Kawaguchi, Takashi Matsubara, and Toshiro Hirose, Nagoya-shi, Japan, assignors to Toa Gosei Chemical Industry Co., Ltd., Tokyo, Japan
No Drawing. Filed Feb. 28, 1967, Ser. No. 619,182
Claims priority, application Japan, Feb. 28, 1966, 41/11,645; Mar. 18, 1966, 41/16,569
Int. Cl. C07c *171/00*
U.S. Cl. 260—566 14 Claims

A process for producing cyclohexanone oxime by the oxidation of cyclohexanone in the presence of ammonia and hydrogen peroxide using as a catalyst tungstic acid, isopolytungstic acid, heteropolytungstic acid or a salt thereof. The oxidation is conducted in the presence of a soluble tin compound or a polyhydric alcohol, preferably, in an aqueous medium at normal pressure and at temperature of 5–50° C. to improve the yield for cyclohexanone oxime and prevent the insolubilization of the catalyst under the reaction conditions. The yield of cyclohexanone oxime is about 92%.

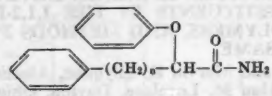
3,562,329
DIBENZO[a,d]CYCLOHEPTEN-5-ONE OXIMES
Harry Louis Yale, New Brunswick, and Francis A. Sowinski, Edison, N.J., assignors, by mesne assignments, to E. R. Squibb & Sons, Inc., New York, N.Y., a corporation of Delaware
No Drawing. Application Jan. 22, 1965, Ser. No. 432,932, now Patent No. 3,448,102, dated Jan. 3, 1969, which is a division of abandoned application Ser. No. 266,011, Mar. 18, 1963. Divided and this application Nov. 29, 1968, Ser. No. 780,184
Int. Cl. C07c *131/08*
U.S. Cl. 260—566 2 Claims

Dibenzo[a,d]cycloheptен-5-one oximes which are useful in the preparation of various 5-(substituted amino-lower alkyl)-5,6-dihydrodibenz[b,f]azocines.

3,562,330
2-PHENOXY-4- AND 5-PHENYL-BUTYL AND -PENTYL-AMINES AND SALTS
Ivan C. Nordin, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich., a corporation of Michigan
No Drawing. Filed July 18, 1968, Ser. No. 745,694
Int. Cl. C07c *93/06*
U.S. Cl. 260—570.5 5 Claims

The novel amine compounds, specifically 2-phenoxy-4-phenylbutylamine, 2 - phenoxy - 5 - phenylpentylamine

and their acid addition salts, are provided by chemically reducing 2-phenoxyphenylamides (II):



(II)

where n is 2 or 3. The products have pharmacological properties and are useful antiarrhythmic agents.

3,562,331

AMINO-LOWER-ALKOXY-DIBENZO[a,d] CYCLOHEPTENE-5-CARBINOLS

John W. Schulenberg and Sydney Archer, Bethlehem, N.Y., assignors to Sterling Drug Inc., New York, N.Y., a corporation of Delaware

No Drawing. Original application Oct. 16, 1964, Ser. No. 404,506, now Patent No. 3,350,405, dated Oct. 31, 1967. Divided and this application Apr. 24, 1967, Ser. No. 632,902

Int. Cl. C07c *93/06*

U.S. Cl. 260—570.7 **7 Claims**

Dibenzo[a,d]cycloheptene-5-ones and 10,11 - dihydro derivatives thereof substituted on one of the benzene rings by an amino-lower-alkoxy group are prepared by reacting the corresponding hydroxydibenzo[a,d]cycloheptene-5-ones with an amino-lower-alkyl halide. The 5-carbonyl group is subsequently converted by reduction, Grignard and dehydration reactions to the groups CH_2, CH(OH), C(lower - alkyl)(OH), C(phenyl - lower - alkyl)(OH), C=(lower - alkylidene), C=(phenyl - lower - alkylidene), CH(lower-alkyl) or CH(phenyl-lower-alkyl). The compounds are useful as antidepressant agents.

3,562,332

FLUORO-ALKYL-SUBSTITUTED POLYNITROAMINES

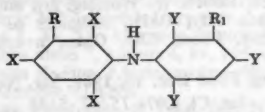
Josef J. Schmidt-Collerus, Denver, Colo., Don N. Gray, Towson, Md., and Claibourne D. Smith, Eugene, Oreg., assignors to the United States of America as represented by the Secretary of the Air Force

No Drawing. Filed Jan. 28, 1964, Ser. No. 340,836

Int. Cl. C07c *87/60*

U.S. Cl. 260—576 **3 Claims**

1. The compounds having the formula:



where R and R_1 each represents a fluoro-alkyl radical having from 1 to 5 carbon atoms, X represents a nitro radical and Y is selected from the group consisting of hydrogen and a nitro radical.

3,562,333

FLUORO-ALKYL-SUBSTITUTED POLYNITRO AROMATIC AMINES AND NITRAMINES

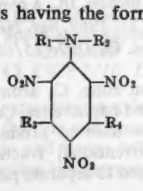
Josef J. Schmidt-Collerus, Denver, Colo., and Don N. Gray, Towson, Md., assignors to the United States of America as represented by the Secretary of the Air Force

No Drawing. Filed Jan. 28, 1964, Ser. No. 340,837

Int. Cl. C07c *87/60*

U.S. Cl. 260—577 **6 Claims**

1. The compounds having the formula:



where R_1 is selected from the group consisting of hydrogen and a nitro radical; and R_2, R_3 and R_4 are each selected from the group consisting of hydrogen, a monovalent lower alkyl radical, and a fluoro-substituted monovalent lower alkyl radical provided that at least one of the substituents R_2, R_3 and R_4 is fluoro-substituted monovalent lower alkyl radical.

3,562,334

PRODUCTION OF STABLE DICHLOROACETALDEHYDE

Sidney Berkowitz and John H. Blumbergs, Highland Park, N.J., assignors to FMC Corporation, a corporation of Delaware

No Drawing. Filed Sept. 21, 1964, Ser. No. 398,110

Int. Cl. C07c *45/24*

U.S. Cl. 260—601 **2 Claims**

A high-purity dichloroacetaldehyde (DCA) is obtained which is stable against linear polymerization by maintaining the hydrogen chloride concentration at no greater than 0.5% by weight, maintaining the monochloroacetaldehyde concentration at no greater than 1% and by maintaining the DCA product free of metal impurities; if metal impurities are present, they can be neutralized by addition of effective amounts of either 2-benzothiazyl disulfide, thiourea or ethanolamine.

3,562,335

4,4'-BIS(CHLOROALKOXY)BIPHENYLS

David R. Gildersleve, Kent, England, assignor to Pfizer Inc., New York, N.Y., a corporation of Delaware

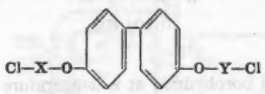
No Drawing. Continuation-in-part of application Ser. No. 589,207, Oct. 25, 1966. This application Mar. 19, 1969, Ser. No. 808,657

Claims priority, application Great Britain, June 23, 1966, 28,140/66

Int. Cl. C07c *43/28*

U.S. Cl. 260—613 **3 Claims**

Antiviral agents of the formula:



wherein X and Z are each alkylene of 2 to 7 carbons, and the preparation thereof.

3,562,336

SYNTHESIS OF NAPHTHALENE DERIVATIVES

Peter H. Nelson, Los Altos, Calif., assignor to Syntex Corporation, Panama, Panama, a corporation of Panama

No Drawing. Filed July 24, 1968, Ser. No. 747,071

Int. Cl. C07c *43/20*

U.S. Cl. 260—613 **4 Claims**

2-(6-methoxy-2'-naphthyl)propanal is synthesized from 6-methoxy-2-acetylnaphthalene by treatment with a phosphonium ylid, sulfcnium ylid or a phosphonate carbanion followed by acid hydrolysis to the aldehyde which is converted into 2-(6'-methoxy-2'-naphthyl)propanol by reduction and into 2-(6'-methoxy-2'-naphthyl)propionic acid by oxidation, these compounds have anti-inflammatory activity.

3,562,337

DETERGENT

Vincent Lamberti, Upper Saddle River, and Henry Lemaire, Leonia, N.J., assignors to Lever Brothers Company, New York, N.Y., a corporation of Maine

No Drawing. Original application Oct. 22, 1965, Ser. No. 502,299, now Patent No. 3,427,248, dated Feb. 11, 1969. Divided and this application Aug. 7, 1968, Ser. No. 764,362

Int. Cl. C07c *43/00, 43/04*

U.S. Cl. 260—615 **7 Claims**

The specification is concerned with polyolethers or polyolpolyethers which may be prepared, among other

methods, by reacting a long chain epoxide or long chain glycidyl ether with a polyhydroxy compound.

3,562,338

PROCESS FOR PRODUCING 4,4'-BIS(2,6 DIHYDROCARBYLPHENOL)

Edward F. Zaweski, Royal Oak, Mich., assignor to Ethyl Corporation, New York, N.Y., a corporation of Virginia

No Drawing. Continuation-in-part of application Ser. No. 553,024, May 26, 1966. This application June 21, 1967, Ser. No. 647,614

Int. Cl. C07c *39/12, 49/62*

U.S. Cl. 260—620 19 Claims

Reaction of a phenol such as 2,6-di-tert-butylphenol with oxygen in the presence of an alkali metal hydroxide followed by reaction of the product formed with additional phenol, preferably the same type phenol, in a substantially oxygen-free system yields a bisphenol (e.g., 4,4'-bis(2,6-di-tert-butylphenol)). Product quality and yields are improved if the reaction product is acidified after the bisphenol has formed, but before allowing the reaction product to contact oxygen.

3,562,339

PREPARATION OF NITROALKANES FROM VICINAL NITROALKYL NITRATES

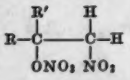
John M. Larkin, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y., a corporation of Delaware

No Drawing. Filed May 29, 1968, Ser. No. 732,886

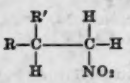
Int. Cl. C07c *79/04*

U.S. Cl. 260—644 14 Claims

A method for preparing 1-nitroalkanes by reacting a vicinal nitroalkyl nitrate corresponding to the formula:



with an alkali borohydride at a temperature of from 30 to 200° F. and subsequently acidifying. In preferred embodiments the vicinal nitroalkyl nitrate is reacted with an alkali borohydride and an alkali agent such as sodium hydroxide and thereafter acidified to provide the desired product. The nitroalkanes so prepared correspond to the formula:



and are useful as plasticizers, gasoline and lubricant additives, herbicides, pesticides and nematocides. Further they are useful as intermediates in the preparation of nitroalcohols, amino alcohols and diamines.

3,562,340

HALOGENATED β-CAROTENE PRECURSORS

Joseph Donald Surmatis, West Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J., a corporation of New Jersey

No Drawing. Original application Dec. 4, 1964, Ser. No. 416,128, now Patent No. 3,408,414, dated Oct. 29, 1968. Divided and this application July 11, 1968, Ser. No. 743,979

Int. Cl. C07c *23/10*

U.S. Cl. 260—648 2 Claims

A process for producing trans-β-carotene from oxenin or isooxenin by conversion to a phosphine or to a phosphite and intermediates formed in this process.

3,562,341

POLYFLUORINATED 1,3-DIENES HAVING FLUORINE SUBSTITUENTS IN THE 1,1,2-POSITION, THEIR POLYMERS, AND METHODS FOR MAKING THE SAME

Paul Tarrant and Marvin R. Lilyquist, Alachua County, Fla., and Alan M. Lovelace, Dayton, Ohio, assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Continuation of application Ser. No. 504,698, Apr. 28, 1955. This application July 29, 1968, Ser. No. 753,831

Int. Cl. C07c *21/20, 17/34*

U.S. Cl. 260—653.3 7 Claims

This invention relates to incompletely polyfluorinated 1,3-dienes capable of forming cross-linked polymers and having fluorine substituents in at least the 1,1,2-position, and to synthesis for their preparation. More particularly, the invention relates to a synthesis for 1,1,2-trifluorobutadiene-1,3, and to the compounds 1,1,2,4,4-pentafluorobutadiene - 1,3, and 1,1,2,4,4 - pentafluoro-3-methylbutadiene-1,3.

3,562,342

ISOMERIZATION OF ALKYL AROMATICS

Gayle P. Hebert, Port Neches, and Jerry C. Perciful, Groves, Tex., assignors to Texaco Inc., New York, N.Y., a corporation of Delaware

No Drawing. Filed Nov. 27, 1968, Ser. No. 779,612

Int. Cl. C07c *15/02, 15/08*

U.S. Cl. 260—668 11 Claims

A process for the isomerization of alkyl aromatic streams under hydroisomerization conditions using a catalyst comprising nickel and tungsten as the metals or sulfides, and a mixture of a decationized crystalline zeolite and an amorphous inorganic oxide.

3,562,343

CATALYTIC ISOMERIZATION OF 2-PHENYLALKANES

Ronald L. Poe, Robert W. Wotring, Jr., and Claude D Butler, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla., a corporation of Delaware

No Drawing. Filed Dec. 16, 1968, Ser. No. 784,228

Int. Cl. C07c *15/02, 5/28*

U.S. Cl. 260—668 5 Claims

A 2-phenylalkane stream containing isomerization inhibitor impurities is contacted with gaseous HCl until the 2-phenylalkane stream is saturated with the gaseous HCl. The HCl saturated 2-phenylalkane stream is then heated in the presence of an aluminum chloride catalyst for a sufficient period of time until a substantial amount of the 2-phenylalkane has been isomerized to other isomers.

3,562,344

PARAXYLENE RECOVERY

Robert J. Hengstebeck, Valparaiso, Ind., assignor to Standard Oil Company, Chicago, Ill., a corporation of Indiana

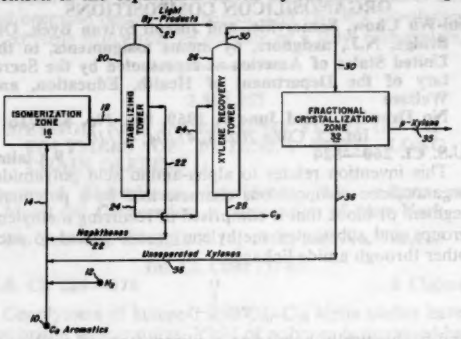
Filed May 21, 1969, Ser. No. 826,637

Int. Cl. C07c *15/08*

U.S. Cl. 260—668 3 Claims

In an isomerization zone, C_8 aromatics are converted into xylene isomers and naphthenes. Conventional isomerization techniques are used to produce the xylenes and naphthenes, and conventional fractional crystallization techniques are then used to separate paraxylene from other

isomers of xylenes. The distinguishing feature of my invention is the separation of the xylenes from the naphthenes before crystallization and then recycling the naphthenes to the isomerization zone.



3,562,345

CRYSTALLINE ALUMINOSILICATE-ALUMINA COMPOSITION AND TRANSALKYLATION THEREWITH

Roy T. Mitsche, Island Lake, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill., a corporation of Delaware

No Drawing. Filed Sept. 18, 1968, Ser. No. 760,691
Int. Cl. C01b *33/28;* C07c *3/50, 3/58*
U.S. Cl. 260—672 11 Claims

A composition comprising as essential components thereof a crystalline aluminosilicate containing alumina fixed in combination therewith, and a method of preparation. The composition preferably comprises mordenite containing alumina fixed in combination therewith and is particularly effective as a catalyst with respect to the transalkylation or disproportionation of toluene to form benzene and polymethylbenzene products.

3,562,346

PROCESS FOR DEHYDROGENATION, DEHYDROCYCLIZATION AND HYDRODEALKYLATION OF HYDROCARBONS

Viktor Sergeevich Smirnov, Kutuzovsky prospekt 26, kv. 556; Vladimir Mikhailovich Gryaznov, Leninskie Gory MGU zona L, kv. 11; Alexandr Petrovich Mischenko, Khersonskaya ulitsa 7, korpus 4, kv. 115; and Antonina Alexandrovna Rodina, Ljusinovskaya ulitsa 53/12, kv. 53, all of Moscow, U.S.S.R.

No Drawing. Filed Mar. 8, 1968, Ser. No. 711,535
Claims priority, application U.S.S.R., Mar. 8, 1967, 1,139,894; Mar. 9, 1967, 1,140,205; Apr. 28, 1967, 1,157,508, 1,157,509, 1,157,510
Int. Cl. B01j *11/08;* C07c *5/18;* C10g *35/06*
U.S. Cl. 260—673.5 22 Claims

Palladium alloyed with copper, gold, boron, or a Group VIII metal is employed for hydrodealkylation and for dehydrogenation to produce aromatics, diolefins, and mono-olefins.

3,562,347

PROCESS FOR EXTRACT-ISOMERIZATION OF XYLENE ISOMERS

Yoshiro Ito, Tamotsu Ueno, Takashi Nakano, and Kazuo Okamoto, Okayama-ken, Japan, assignors to Japan Gas-Chemical Company, Inc., Tokyo, Japan, a Japanese body corporate

Filed Dec. 11, 1968, Ser. No. 782,994
Claims priority, application Japan, Dec. 15, 1967, 42/80,410
Int. Cl. C07c *7/10, 15/08*
U.S. Cl. 260—674 10 Claims

In a process for extracting m-xylene as a complex of m-xylene, hydrogen fluoride and boron trifluoride by adding hydrogen fluoride and boron trifluoride to a mixture of xylenes and subjecting the extract phase to decomposition and isomerization, a process for extract-isomerizing m-xylene, characterized by substitute-feeding of a certain portion of hydrogen fluoride and boron trifluoride to be fed into an extracting apparatus in the form of a complex of isomerization reaction product.

3,562,348

PRODUCTION OF ALUMINUM-FREE HYDROCARBON

David M. Jenkins, Penn Hills Township, Allegheny County, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa., a corporation of Delaware

Filed Sept. 11, 1968, Ser. No. 759,037
Int. Cl. C07c *11/02*
U.S. Cl. 260—677 8 Claims

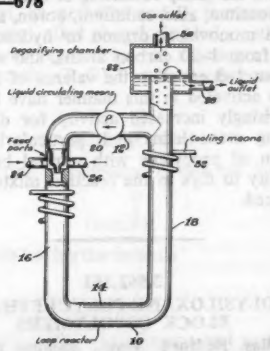
Organo-aluminum compounds are removed from a hydrocarbon stream by hydrolysis with water, alone, by forming a hydrocarbon-water admixture, separating gases from the admixture in an upper zone and flowing the hydrocarbon-water admixture to intermediate and lower zones for separation of the hydrocarbon from an aqueous aluminum slurry. The process is conducted at elevated temperatures below the boiling point of water.

3,562,349

PROCESS AND REACTOR FOR REMOVING OLEFINS FROM ACETYLENIC AND OLEFIN-CONTAINING GASEOUS HYDROCARBON MIXTURES

Chester E. Pawloski, Bay City, and Russell L. Stewart, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich., a corporation of Delaware

Filed Dec. 22, 1967, Ser. No. 692,892
Int. Cl. C07c *11/24, 11/22*
U.S. Cl. 260—678 5 Claims



Olefins are substantially removed from an acetylenic and olefin-containing gaseous hydrocarbon mixture by chlorinating said mixture in the presence of the liquid chlorination products of said mixture wherein the temperature is below about 60° C. The process is conducted in a novel reactor and the resulting gaseous product is useful as a welding and cutting gas.

3,562,350

PROCESS FOR MANUFACTURING CONJUGATED DIOLEFINS FROM ALKYL-1,3-DIOXANES

Bernard Juguin, Rueil Malmaison, and Bernard Torck, Chatou, France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil Malmaison, Hauts-de-Seine, France

No Drawing. Filed Dec. 12, 1968, Ser. No. 783,436
Claims priority, application France, Dec. 13, 1967, 132,357
Int. Cl. C07c *1/20;* B01j *11/83*
U.S. Cl. 260—681 11 Claims

A process for manufacturing conjugated diolefins from an alkyl-1,3-dioxane which comprises passing said dioxane, at a temperature of about 250 to 500° C., over a catalyst comprising a compound of an element selected from

Groups II–A and II–B of the Periodic Table and a precursor of phosphoric anhydride deposited on a silica carrier, the Group II–A and Group II–B element, expressed as the oxide, being present in an amount of about 2 to 20% by weight, based on the total catalyst and the phosphoric anhydride precursor, expressed as P_2O_5, being present in an amount of about 2 to 20% by weight, based on the total catalyst, the molar ratio of P_2O_5 to the Groups II–A and II–B metal oxide being about 0.1 to 0.6, said process being conducted in the present of a steam diluent having a phosphoric acid content of about 0.001 to 0.1% by weight, expressed as P_2O_5, the ratio by volume of water to the dioxane, calculated in the liquid state being about 0.1 to 15, and recovering the conjugated diolefins.

3,562,351

DIMERIZATION PROCESS

Joseph K. Mertzweiller and Horace M. Tenney, Baton Rouge, La., assignors to Esso Research and Engineering Company, a corporation of Delaware

No Drawing. Filed Nov. 16, 1967, Ser. No. 683,493

Int. Cl. C07c *3/10*

U.S. Cl. 260—683.15 **3 Claims**

A Group VIII water-soluble metal salt impregnated upon a suitable support such as aluminum oxide, silica, activated carbon or the like, is heat-treated in an inert atmosphere at a temperature sufficient to remove water and absorbed oxygen from the supported metal salt, but insufficient to oxidize the metal salt to its oxides. This catalyst is then activated by treating it with an organometallic compound R_nM, wherein M is a metal selected from the group consisting of lithium, magnesium, calcium, strontium, zinc, cadmium, boron, and aluminum, and R is a monovalent organo or hydrocarbon radical containing from 1–20 carbon atoms, and *n* is an integer ranging from 1–3 equal to the valence of M.

Catalysts activated in this manner have been found to have surprisingly increased activity for dimerizing and codimerizing monoolefins and, particularly, in the codimerization of propylene with normal butene wherein the selectivity to C_7's in the reaction mixture is remarkably enhanced.

3,562,352

POLYSILOXANE-POLYURETHANE BLOCK COPOLYMERS

Emery Nyilas, Bedford, Mass., assignor to Avco Corporation, Cincinnati, Ohio, a corporation of Delaware

No Drawing. Filed Sept. 6, 1968, Ser. No. 758,141

Int. Cl. C08g *41/04, 47/10*

U.S. Cl. 260—824 **29 Claims**

Block-copolymers of a polyurethane and a polysiloxane having direct silicon to nitrogen linkages, a method for their formation and articles formed therefrom. The copolymers are formed by a condensation type reaction between reactive terminal groups of the polysiloxane and the urethane-amide groups of the polyurethane. Inasmuch as the reaction involves only the amino groups of the polyurethane, both polyether and polyester urethanes may be used. The preferred block-copolymers are those having a minor portion of poly(dialkylsiloxane) segments and a major portion of polyurethane segments. These copolymers are characterized by a high degree of blood compatibility and consequently, are useful in providing blood contact surfaces for devices used for direct implantation into the body or for extracorporeal circulation of blood such as circulatory assist devices including auxiliary ventricles and intra-aortic balloons, and various types of blood pumps.

3,562,353

ALPHA-AMINO ACID POLYAMIDE-ORGANOSILICON COMPOSITIONS

Sui-Wu Chow, Somerville, and Joseph Sylvan Byck, Old Bridge, N.J., assignors, by mesne assignments, to the United States of America as represented by the Secretary of the Department of Health, Education, and Welfare

No Drawing. Filed June 9, 1969, Ser. No. 831,716

Int. Cl. C08g *20/08, 41/04, 47/10*

U.S. Cl. 260—824 **9 Claims**

This invention relates to alpha-amino acid polyamide-organosilicon compositions characterized by a polymeric segment or block that is comprised of recurring methylene groups and substituted methylene groups linked to each other through amide linkages

and is chemically bonded to a silicon atom of a siloxane to form block copolymers. The compositions are stable to heat and light and are useful as protective coatings, casting materials, molding materials and elastomers.

3,562,354

POLYVINYL CHLORIDE BASED COATINGS CONTAINING GLYCIDYL METHACRYLATE AND VINYL ACETATE FOR METALLIC OBJECTS

Jean Golstein, Brussels, Belgium, assignor to Solvay & Cie, Brussels, Belgium

No Drawing. Filed May 1, 1968, Ser. No. 725,913

Claims priority, application Belgium, May 3, 1967, 43,181

Int. Cl. C08g *45/04*

U.S. Cl. 260—836 **11 Claims**

A resinous coating composition which is designed for use in the coating of metallic objects by the technique of fluid bed coating or electrostatic coating comprising a polyvinyl chloride based resin which is obtained by the polymerization of a glycidylic ester of an unsaturated acid and of vinyl acetate in the presence of porous grains of polyvinyl chloride.

3,562,355

BLOCK COPOLYMER BLENDS WITH CERTAIN POLYURETHANES OR ETHYLENE-UNSATURATED ESTER COPOLYMERS

Geoffrey Holden, Los Alamitos, Calif., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Mar. 20, 1968, Ser. No. 714,405

Int. Cl. C08g *41/04;* **C08f** *15/00, 19/00*

U.S. Cl. 260—859 **5 Claims**

Block copolymer compositions are provided having substantially improved physical properties by incorporation of certain polyester urethanes.

3,562,356

BLOCK COPOLYMER BLENDS WITH CERTAIN ETHYLENE-UNSATURATED ESTER COPOLYMERS

David D. Nyberg, Sunnyvale, and Willis R. Hendricks, Palos Verdes Estates, Calif., assignors to Shell Oil Company, New York, N.Y., a corporation of Delaware

No Drawing. Continuation-in-part of application Ser. No. 490,119, Sept. 24, 1965. This application Nov. 19, 1968, Ser. No. 777,134

Int. Cl. C08f *29/50*

U.S. Cl. 260—876 **6 Claims**

Compositions exhibiting improved flex cracking resistance and improved resistance to solvent action and ozone comprising (A) a block copolymer of the formula

wherein each A is a polymer block of a monovinyl arene and each B is a polymer block of a conjugated diene, and hydrogenated derivatives thereof, and (B) is a copolymer of ethylene with either an acrylate or a vinyl carboxylate.

3,562,357

METHOD FOR INCREASING YIELD OF COPOLYMERS OF BUTENE-1 WITH LONG CHAIN OLEFINS

Raymond Eichenbaum, Providence, R.I., assignor to Mobil Oil Corporation, a corporation of New York

No Drawing. Filed Dec. 11, 1968, Ser. No. 783,125

Int. Cl. C08f *15/40*

U.S. Cl. 260—878 **2 Claims**

Copolymers of butene-1 and C_{10}–C_{18} alpha olefins have low brittle temperatures. Yield of polymer is increased by first reacting Ziegler-Natta catalyst with the C_{10}–C_{18} alpha olefin at 10–40° C. for 4–20 hours, and then introducing the catalyst and prepolymer, thus obtained, into the main butene-1 polymerization.

3,562,358

GRAFT POLYMERIZATION OF VINYL HALIDE MONOMERS AND DIENE POLYMERS

Sheldon F. Gelman, Danbury, Conn., assignor to Stauffer Chemical Company, New York, N.Y., a corporation of Delaware

No Drawing. Filed Nov. 7, 1967, Ser. No. 681,074

Int. Cl. C08f *15/02*

U.S. Cl. 260—879 **26 Claims**

Vinyl halide polymers which exhibit improved processing characteristics without sacrificing physical properties are prepared by polymerizing vinyl halide monomer in the presence of from about 0.05% to about 0.75% by weight based on the total weight of monomer of a diene polymer having available unsaturation such as polybutadiene, styrene/butadiene copolymer or natural rubber. The monomer is preferably 100% vinyl chloride through minor amounts of other ethylenically unsaturated monomers can also be used.

3,562,359

GRAFT POLYMERIZATION OF VINYL HALIDE ON AN ELASTOMER IN THE PRESENCE OF A MERCAPTAN

Sheldon F. Gelman, Danbury, Conn., assignor to Stauffer Chemical Company, New York, N.Y., a corporation of Delaware

No Drawing. Filed Nov. 7, 1967, Ser. No. 681,099

Int. Cl. C08f *15/02*

U.S. Cl. 260—879 **79 Claims**

Vinyl halide polymers which exhibit improved processing characteristics without sacrificing physical properties are prepared by polymerizing vinyl halide monomer in the presence of: (1) an aliphatic mercaptan in an amount based on —SH equivalence of from about 0.000075 to about 0.05 equivalence —SH per mole of monomeric material, and (2) from about 0.01 to about 1% by weight of a polymerizable organosolvent soluble unsaturated diene elastomer such as polybutadiene, styrene/butadiene copolymer, or natural rubber. The monomer is preferably 100% vinyl chloride though minor amounts of other ethylenically unsaturated monomers can also be used. The mercaptan is preferably a polymercaptan having at least 3 and more preferably from 3 to 5 mercaptan groups per molecule.

3,562,360

GRAFT COPOLYMERS OF FIBER-FORMING ACRYLONITRILE POLYMERS AND POLYMERIC 2,2-DISUBSTITUTED PROPIOLACTONE

Charles King and Frederick Theodore Wallenberger, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del., a corporation of Delaware

No Drawing. Original application Apr. 27, 1966, Ser. No. 545,545, now Patent No. 3,379,794, dated Apr. 23, 1968. Divided and this application Mar. 8, 1968, Ser. No. 711,486

Int. Cl. C08f *29/56*

U.S. Cl. 260—898 **7 Claims**

This invention relates to new polymeric compositions derived from acrylonitrile which are graft copolymers of a fiber-forming acrylonitrile polymer and a polymeric 2,2-disubstituted propiolactone. Fibers thereof exhibit enhanced recovery and improved modulus when hot and wet.

3,562,361

O,O-DILOWER ALKENYL PHENOXYACETYL PHOSPHONATES

Dalta W. Gier, Laurinburg, N.C., assignor to Chemagro Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 449,640, Apr. 20, 1965, which is a continuation-in-part of application Ser. No. 412,263, Nov. 18, 1964. This application Oct. 17, 1967, Ser. No. 675,356

Int. Cl. A01n *9/36;* **C07f** *9/40*

U.S. Cl. 260—941 **7 Claims**

Compounds of the formula

$$(RO)_2PCCH_2OR_1''$$

where R_1 is alkyl, phenyl, alkyl phenyl, chloroalkyl, cyanoalkyl, allyl, or methallyl and R_2 is mono, di or trihalophenyl, phenyl, alkyl phenyl, ring halo methyl phenyl, alkoxyphenyl are prepared by (1) reacting a compound having the formula $(R_1O)_3P$ with a compound having the formula

$$R_1OCH_2\overset{O}{\overset{\|}{C}}Cl$$

or (2) by reacting a compound having the formula

$$(RO)_2\overset{O}{\overset{\|}{P}}H$$

with a compound having the formula

$$R_1OCH_2\overset{O}{\overset{\|}{C}}Cl$$

The products are useful as desiccants and as herbicides. The allyl compounds are particularly effective as selective herbicides for broad leaf plants.

3,562,362

PHOSPHORUS CONTAINING ALKYL THIO METHYL CARBOXYLATES

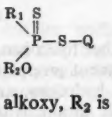
Charles Kezerian, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y., a corporation of Delaware

No Drawing. Filed Nov. 8, 1967, Ser. No. 681,576

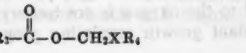
Int. Cl. C07f *9/16, 9/40*

U.S. Cl. 260—942 **8 Claims**

Certain substituted phosphorus containing alkyl thio methyl carboxylates of the formula:

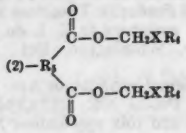


in which R_1 is alkyl or alkoxy, R_2 is alkyl and Q is:



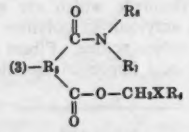
in which:

R_3 is alkylene, C_1–C_4; X is sulfinyl or thio and R_4 is alkyl, C_1–C_4; or



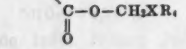
in which:

X and R_4 are as defined and R_5 is a trivalent saturated hydrocarbon, C_1–C_3; or



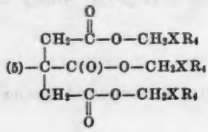
in which:

X, R_4 and R_5 are as defined and R_6 and R_7 are hydrogen, alkyl C_1–C_8, aryl, halo or cyano substituted alkyl or aryl, or tetrahydro furfuryl or when R_6 and R_7 are taken together, an alkylene, C_2–C_8, ethyleneoxyethylene or ethylenethioethylene groups; or



in which:

X, R_4 and R_5 are as defined and R_8 is alkyl C_1 to C_2 or halogen, aryl, haloaryl substituted derivatives thereof; or



in which:

X and R_4 are as defined and the use of these compounds as insecticides and acaricides.

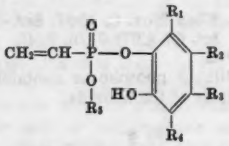
3,562,363

O-CATECHOL O-HYDROCARBYL-VINYL PHOSPHONATES AND PROCESS FOR MAKING SAME

David I. Randall, Easton, Pa., assignor to GAF Corporation, New York, N.Y., a corporation of Delaware

No Drawing. Filed Mar. 22, 1967, Ser. No. 624,995
Int. Cl. C07f 9/40; A01n 9/36
U.S. Cl. 260—953 **11 Claims**

The compounds are esters and half esters of vinylphosphonic acid represented by the following structural formula:



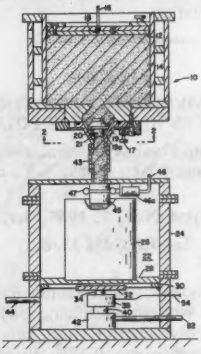
wherein R_1–R_4 are either hydrogen, alkyl, alkoxy, or halo and two of the substituent groups may form a condensed ring and R_5 is either hydrogen, an aromatic, a cycloaliphatic, or an aliphatic group, wherein the carbon atom linked to the oxygen is not tertiary. The compounds possess plant growth regulating properties, e.g., control of apical dominance, and may also be employed as monomers for the production of polymers. The compounds are produced from the catechol and substituted catechol cyclic esters of vinylphosphonic acid, with the half esters being produced by hydrolysis of the cyclic ester and the esters being produced by transesterification of the cyclic ester with a suitable alcohol.

3,562,364

REMOTE PROPELLANT CASTING PROCESS

Ford J. Caudle, Athens, Ala., Joe S. Foster, Newtown, Pa., Bobby K. Nipp, Knoxville, Tenn., and Solon H. Morring, New Hope, and Russell T. Smith, Decatur, Ala., assignors, by mesne assignments, to the United States of America as represented by the Secretary of the Army

Filed May 6, 1968, Ser. No. 726,936
Int. Cl. C06b 21/00
U.S. Cl. 264—3 **3 Claims**



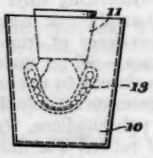
A novel process and apparatus for casting high energy solid propellants without exposure to personnel. The process involves vacuum casting of the propellant mix from a propellant mixer bowl into a rocket motor case underneath the mixer bowl by pulling a vacuum on the mixer bowl from the structure containing the rocket motor case in order to open a discharge valve located between the mixer bowl and the rocket motor. Channeling is prevented and air excluded by the use of a follower plate resting on top of the propellant mix.

3,562,365

PROCESS FOR MOULDING DENTURES

Derek E. Redgwell, 24 Manor Road, Guildford, Surrey, England

Filed Sept. 4, 1968, Ser. No. 757,359
Claims priority, application Great Britain, Sept. 6, 1967, 40,665/67
Int. Cl. A61c 13/00; B29c 1/02
U.S. Cl. 264—16 **2 Claims**



A method in which a cavity is first formed in a moulding material in a flask by using a wax model of the article attached to a plug, the plug then being removed and the wax melted out, moulding dough then being inserted in

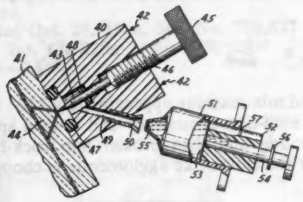
quantity in excess of the cavity and forced in by a second smaller plug so that excess material passes out around the second plug, the dough then being cured with the second plug clamped in position.

3,562,366

METHOD OF REPAIRING WINDSHIELDS

William E. Sohl, Landau, Ontario, Canada, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn., a corporation of Delaware

Filed Dec. 18, 1968, Ser. No. 784,732
Int. Cl. B29c 27/04
U.S. Cl. 264—23 4 Claims



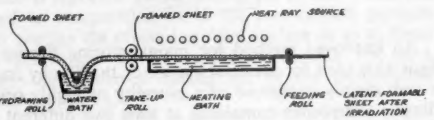
Pock marks in automotive windshields are extinguished by completely filling with liquid resin under high frequency vibration and polymerizing the resin, all while leaving the windshield in place.

3,562,367

PROCESS FOR PRODUCING THERMOPLASTIC RESIN FOAM

Yasuo Shinohara, Toshimasa Takahashi, and Kenji Yamaguchi, Ohtsu-shi, Japan, assignors to Toyo Rayon Kabushiki Kaisha, Tokyo, Japan, a corporation of Japan

Filed Feb. 25, 1965, Ser. No. 435,285
Claims priority, application Japan, Feb. 27, 1964, 39/10,606; Mar. 9, 1964, 39/12,870; Sept. 25, 1964, 39/54,303; Sept. 29, 1964, 39/54,738; Oct. 15, 1964, 39/58,329
Int. Cl. B29d 7/02, 7/14; H05b 7/16
U.S. Cl. 264—25 9 Claims



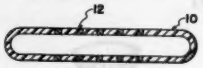
The production of a foamed thermoplastic resin by applying an ionizing radiation to a sheet which is formed of an olefinic resinous composition and a foaming agent, and thereafter floating the sheet on a heated bath while irradiating it from above with heat rays.

3,562,368

GAS RELEASE FROM CELLULOSE CASING BY MULTIPLE PERFORATIONS

Douglas J. Bridgeford, Danville, Ill., assignor to Tee-Pak, Inc.

Filed Dec. 13, 1967, Ser. No. 690,161
Int. Cl. B29d 23/04
U.S. Cl. 264—36 9 Claims



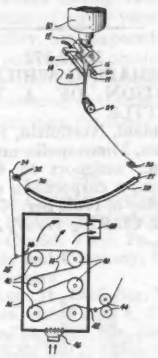
A method of venting fluids from artificial tubular casings made by the viscose process comprises perforating multiple small holes in a discrete area of the cellulose xanthate casing during regeneration thereof. The holes are later filled with a suitable liquid, gel-forming dope (e.g., a 16% cellulose, low degree of polymerization, viscose) or with a solid suspension or slurry of water swellable material (e.g., low alkali unregenerated cellulose xanthate) in a water-miscible organic solvent (e.g., acetone) or by securing a solid film patch such as cellulose onto the gel casing with an adhesive such as alpha-cyanomethyl acrylate monomer.

3,562,369

PRODUCING A CRINKLED AND FIBRILLATED RIBBON BY HOT MELT DRAWING TECHNIQUES

Sohinder Nath Chopra, 1222 Cadieux St., St. Bruno, Quebec, Canada, and Hilaire Marcel Turmel, 260 Garceau St., Drummondville, Quebec, Canada

Filed Jan. 11, 1968, Ser. No. 697,209
Int. Cl. B29d 7/02, 7/24, 27/00
U.S. Cl. 264—41 2 Claims



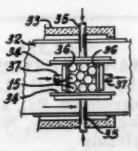
A method for producing a fibrillated and crinkled thermoplastic textile product. The method involves the extrusion of a foamed thermoplastic ribbon under tension sufficient to produce hot-melt drawing. The fibrillated thermoplastic ribbon is then molecularly oriented and subsequently heat relaxed so as to produce the crinkled characteristics.

3,562,370

METHOD OF PRODUCING CELLULAR BODIES HAVING HIGH COMPRESSIVE STRENGTH

Richard F. Shannon, Lancaster, Ohio, assignor to Owens-Corning Fiberglas Corporation, a corporation of Delaware

Continuation-in-part of application Ser. No. 378,216, June 26, 1964, which is a continuation-in-part of application Ser. No. 132,827, Aug. 21, 1961. This application Sept. 29, 1966, Ser. No. 582,903
Int. Cl. B29d 27/00
U.S. Cl. 264—45 5 Claims



The production of cellular bodies constituting glass foam pellets in end to end abutting engagement laterally bonded together by a tightly adhering expandable binder. The binder may be a foamable organic resin or a foamable inorganic material. Examples of such materials being partially foamed polystyrene beads or a foamed oxychloride oxy-sulfate cement.

3,562,371

HIGH TEMPERATURE GAS ISOSTATIC PRESSING OF CRYSTALLINE BODIES HAVING IMPERMEABLE SURFACES

Edward A. Bush, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y., a corporation of New York

No Drawing. Filed Oct. 16, 1968, Ser. No. 768,166
Int. Cl. C04b *35/64, 41/02*
U.S. Cl. 264—65 11 Claims

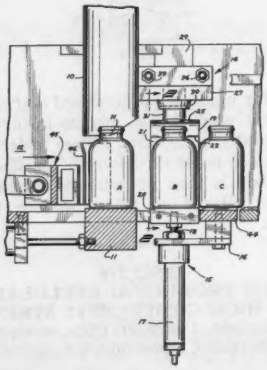
Crystalline metal and ceramic bodies that have previously been sintered to the extent that the only porosity remaining in the body is closed porosity are isostatically hot pressed to a still higher density by surrounding the body which is maintained at sintering temperature with a gas at a pressure of at least 10,000 p.s.i. The gas must be inert to the body being pressed and must not permeate said body during the hot isostatic pressing step. While prior isostatic hot pressing processes have required the use of an impermeable container or an additional coating layer for the work piece neither are required in the present process.

3,562,372

METHOD OF SHAPING WHILE COOLING THE NECK PORTION OF A BLOW MOLDED PLASTIC BOTTLE

Gilmore T. Schjeldahl, Northfield, Harry R. Carlsen and James A. Warren, Minneapolis, and Charles Eumurian, St. Paul, Minn., assignors to Giltech Corporation, Northfield, Minn., a corporation of Minnesota

Filed May 8, 1968, Ser. No. 727,603
Int. Cl. B29c *17/07, 25/00*
U.S. Cl. 264—94 3 Claims



Cooling of the neck portion of a plastic bottle after blow molding by discharging the bottle from the blow mold and immediately inserting a chilled gage into the bottle neck portion so that such portion will shrink onto the gage and have its internal diameter conform to the gage.

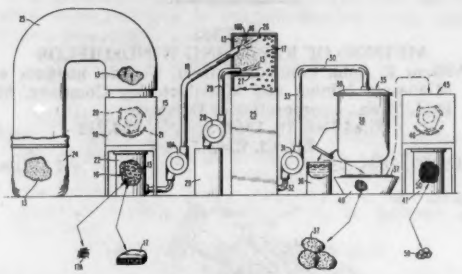
3,562,373

METHOD OF MANUFACTURING PELLETS OF THERMOPLASTIC MATERIAL

James Logrippo, Norristown, Pa., assignor to Norristown Rug Manufacturing Company, Norristown, Pa., a partnership of Pennsylvania

Filed Mar. 6, 1969, Ser. No. 804,949
Int. Cl. B01j *2/00*
U.S. Cl. 264—118 9 Claims

A method of manufacturing pellets for charging extruders, molds, etc. from fabric supported sheet vinyl. The supported sheet vinyl is typically a foamed waste which is chopped into a mass or mix of discrete particles. As the sheet vinyl supported foam is chopped, some fly is separated therefrom, and thereafter, as the discrete-sized particles are transported for storage purposes, additional fly is removed. The mix is then blended, the blending action causing heating due to mechanical agitation. Upon



the blended mix reaching approximately 320° F., it attains a viscous mud-like consistency and is then spread out to permit cooling and then broken into rock-like chunks. Thereafter the chunk-like agglomerate is chopped to form pellets.

3,562,374

METHOD FOR MANUFACTURING FIBROUS CONFIGURATION COMPOSED OF A PLURALITY OF MUTUALLY ENTANGLED BUNDLES OF EXTREMELY FINE FIBERS

Miyoshi Okamoto and Koji Watanabe, Otsu-shi, Yasuhiko Nukushina, Koyoto-shi, and Makoto Konosu, Otsu-shi, Japan, assignors to Toray Industries, Inc., Tokyo, Japan, a company of Japan

Filed Oct. 17, 1967, Ser. No. 675,982
Claims priority, application Japan, Oct. 17, 1966, 41/67,882; Oct. 21, 1966, 41/68,903
Int. Cl. B29d *27/00;* D04h *1/64*
U.S. Cl. 264—128 10 Claims

An improved method for manufacturing fibrous configuration used for artificial leather or the like by forming a web mainly composed of a plurality of highly oriented fibrous composites containing at least two different components, forming a felt from the web by entangling the plurality of highly oriented fibrous composite, treating the web with elastic materials and eliminating at least one of the component with suitable solvent.

3,562,375

PROCESS FOR THE SIMULTANEOUS MOLDING AND DECORATION OF ARTICLES MADE OF THERMOSETTING RESINS

François Guy and Marc Brueder, Rumilly, France, assignors to Plastorex S.A., Rumilly, France, a French body corporate

Filed Mar. 25, 1968, Ser. No. 715,918
Claims priority, application France, Apr. 5, 1967, 101,553
Int. Cl. B29c *9/00;* B29g *1/00*
U.S. Cl. 264—131 5 Claims

This process for the simultaneous molding and decoration of articles comprises pre-molding resin to give a preform without effecting complete curing of the resin,

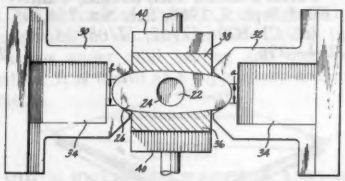
applying a decorated sheet on the preform and completing the molding, the decorated sheet, prior to application on the preform, being sprinkled with a layer of a thermosetting resin which is in the form of fine grains or powder and compatible with that constituting the preform, said layer being attached to the sheet by exposure to steam. The sheet is applied on the preform in such manner that the layer is remote from the preform.

3,562,376

COMPRESSION MOLDING OF WOODEN ARTICLES

Harold L. Hameister, Richfield Springs, N.Y., and Erwin Reitter, Jr., Wilmington, Del., assignors to Remington Arms Company, Inc., Bridgeport, Conn., a corporation of Delaware

Filed Oct. 25, 1968, Ser. No. 770,527
Int. Cl. B29g *1/00*; B29j *5/04*
U.S. Cl. 264—134 **9 Claims**



A wooden article having a curved and varying cross-section and a process of compression molding the article to substantially final dimensions and surface smooothness. The wooden article, e.g., a gun stock, is shaped or formed to within about 10% of its final dimensions and then is treated with a plastic primer means so as to fill up the surface pores and cracks. The primed gun stock is then compressed by heated dies under pressure to mold portions, e.g., the two side faces, to final dimensions. The dies are then cooled while the stock is still held under compression and then the dies are released and the stock removed. The sequence is repeated with a second set of dies which are adapted to compression mold the non-molded portions and to overlap the original molded surface so as to blend in the final surface and thus avoid any flashing. The stock can also be checkered during one of the compression molding operations.

3,562,377

METHOD OF FORMING IRRIGATION PIPE

James B. Zetzsche, Jr., 1405 Marsh St., San Luis Obispo, Calif. 93401

Original application June 20, 1966, Ser. No. 558,786, now Patent No. 3,449,791, dated June 17, 1969. Divided and this application Apr. 15, 1969, Ser. No. 816,356
Int. Cl. B29c *17/14*
U.S. Cl. 264—155 **10 Claims**

A method of forming controlled size orifices within an elongated length of pipe including the steps of moving the pipe along a predetermined path, inserting a piercing tool through one wall of the pipe, orientating the piercing tool at an acute angle to the pierced pipe wall, and rotating the piercing tool about an axis perpendicular to the pierced wall and intersecting the piercing tool within the pierced wall so as to effect a permanent deformation of the material of the pierced wall so as to define an orifice therethrough upon a withdrawal of the piercing tool.

3,562,378

PROCESS FOR SPINNING COMPOSITE ACRYLIC FIBERS

Yoshimasa Fujita, Kazumi Nakagawa, Keitaro Shimoda, and Koji Miyashita, Saidaiji, Japan, assignors to Japan Exlan Co., Ltd.

No Drawing. Continuation-in-part of application Ser. No. 687,934, Sept. 6, 1967, which is a division of application Ser. No. 402,932, Oct. 9, 1964. This application Aug. 20, 1968, Ser. No. 753,859
Claims priority, application Japan, Oct. 14, 1963, 38/55,198
Int. Cl. D01d *5/22*
U.S. Cl. 264—168 **2 Claims**

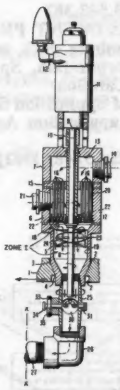
Acrylic composite fibers having latent coily crimps, useful in the manufacture of bulky yarn products having a high degree of flexibility, are prepared by spinning two different acrylonitrile polymers to obtain an acrylic composite fiber, stretching the fiber, subjecting the fiber to structure collapsing treatment, heat-treating the fiber in a relaxed state, and restretching the fiber.

3,562,379

METHOD OF CASTING A SIMULATED MARBLE BUILDING PRODUCT

Ray Brown Duggins, Chadds Ford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del., a corporation of Delaware

Original application Aug. 31, 1966, Ser. No. 576,303, now Patent No. 3,488,246, dated Jan. 6, 1970. Divided and this application Dec. 19, 1968, Ser. No. 794,838
Int. Cl. B29f *3/12*; D06n *7/04*
U.S. Cl. 264—171 **7 Claims**



A process for casting a simulated marble building product including mixing and initiating polymerization of an organic polymerizable material possessing a relatively high viscosity with at least one discrete coherent additional stream of a compatible second material of a differing color, said additional stream having a relatively low viscosity, accumulating the two coextensive separately identifiable materials of predetermined proportions and applying a limited, controlled low order mixing action to progressively displace the second stream in a predetermined reproducible three dimensional configuration

throughout the polymerizing mass, extruding the patterned mass through an extrusion orifice and solidifying the extrudate in a mold assembly to preserve the reproducible, three dimensional, irregular pattern and predetermined color relationship simulating natural stone or marble.

3,562,380

WEB-SPINNING FIBERS AND FILMS OF BENZIMIDAZO-BENZOPHENANTHROLINE POLYMERS

Michael Dunay, Fanwood, and James A. Parker, Plainfield, N.J., assignors to Celanese Corporation, New York, N.Y., a corporation of Delaware

No Drawing. Filed Mar. 21, 1969, Ser. No. 809,367
Int. Cl. D01f *7/04*
U.S. Cl. 264—184 7 Claims

Processes are provided for producing shaped articles such as fibers or films from sulfuric acid solutions of benzimidazo-benzophenanthroline polymers by extruding the solution into a coagulation medium which may be dimethylformamide, dimethylacetamide, N-methyl-2-pyrrolidone, or mixtures thereof. To improve physical properties the coagulated articles may be subsequently hot drawn.

3,562,381

PROCESS FOR PRODUCING ARTICLES OF POLYVINYL ALCOHOL

Ichiro Sakurada, Masakatsu Taniguchi, Kyoto, Akira Utsuo and Yasumasa Chonan, Tokyo, and Ayako Totani, Takatsuki-shi, Japan, assignors to Nihon Hikaku Kabushiki Kaisha, Tokyo, Japan, a Japanese corporation

No Drawing. Filed Oct. 8, 1968, Ser. No. 765,998
Int. Cl. D01f *7/00*
U.S. Cl. 264—185 4 Claims

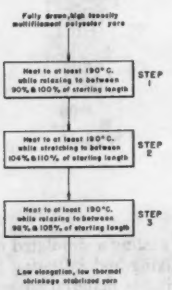
A method of manufacturing articles such as fibers in which collagen, gelatin or glue are blended with aqueous polyvinyl alcohol solution, the resulting dope then being extruded into a coagulation bath.

3,562,382

YARN TREATMENT PROCESS

James E. Fowler, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C., a corporation of South Carolina

Continuation-in-part of application Ser. No. 519,323, Jan. 7, 1966. This application Apr. 7, 1969, Ser. No. 826,748
Int. Cl. D02g *3/48;* D02j *1/22*
U.S. Cl. 264—290 4 Claims


Fully drawn, high tenacity multifilament polyester yarn
Heat to at least 190°C. while relaxing to between 90% & 100% of starting length
STEP 1
Heat to at least 190°C. while stretching to between 104% & 110% of starting length
STEP 2
Heat to at least 190°C. while relaxing to between 98% & 105% of starting length
STEP 3
Low elongation, low thermal shrinkage stabilized yarn

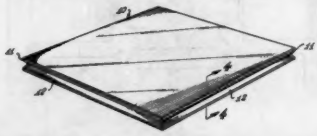
A process for reducing the thermal shrinkage of fully drawn, high tenacity, multifilament polymeric synthetic yarns having substantial thermal shrinkage, by a multiple heat treatment of a running length thereof at substantially constant temperatures each below the sticking temperature of the yarn, which heat treatment consists essentially of the steps of (1) first heating the yarn uniformly for at least about 10 seconds to at least 190° C. while continuously overfeeding it a constant amount so that the yarn shrinks to a length between 90% and 98% of its starting fully drawn length, (2) then heating the yarn uniformly for at least about 10 seconds to at least 190° C. while continuously underfeeding it a constant amount so that the yarn stretches to about 104–110% of its starting fully drawn length, and (3) thereafter heating the yarn uniformly for at least about 10 seconds to at least 190° C. while continuously overfeeding it a constant amount so that the yarn shrinks from its stretched length to about 98–105% of its starting fully drawn length.

3,562,383

METHOD FOR PREVENTING EDGE DEFECTS IN COMPRESSION STRETCHED ACRYLIC SHEETS

Ronald L. Ayres, Saugus, Calif., assignor to Fortin Plastics, Inc., Saugus, Calif.

Filed Sept. 9, 1968, Ser. No. 758,395
Int. Cl. B29c *17/02, 17/08, 24/00*
U.S. Cl. 264—296 8 Claims



A method which comprises providing an acrylic blank with a circumferential groove having a depth of at least 5% of the initial thickness of the blank and thereafter compressing the blank to cause the acrylic material to flow outwardly from the center of the blank to produce a compression-stretched sheet having less thickness than the blank. This method reduces edge defects in compression stretched acrylic sheets.

3,562,384

IMMUNOLOGICAL INDICATOR AND TEST SYSTEM

Edward Robert Arquilla, Pasadena, Calif., assignor to Miles Laboratories, Inc., Elkhart, Ind., a corporation of Indiana

No Drawing. Continuation-in-part of application Ser. No. 301,655, Aug. 12, 1963. This application June 28, 1966, Ser. No. 560,997
Int. Cl. G01n *31/00, 31/08*
U.S. Cl. 424—12 5 Claims

The immunological indicator disclosed is made by attaching chemical coupling agents to microbial cells which serve as indicator particles. Any antigenic material can then be chemically attached thereto in order to form a specific indicator system for that antigenic material. A wide range of microbial cells and coupling agents may be used to form indicator systems which allow immunological tests to be conducted through the mechanisms of agglutination or inhibition of agglutination, and through a chromatographic technique.

3,562,385

DENTAL ANTIPLAQUE AND ANTICALCULUS COMPOSITIONS

Philip L. Block, New Brunswick, Eugene E. Howe, Somerset, and Myron J. Lover, Mountainside, N.J., assignors to Merck & Co., Inc., Rahway, N.J., a corporation of New Jersey

No Drawing. Filed Dec. 23, 1968, Ser. No. 786,868
Int. Cl. A61r *7/16*
U.S. Cl. 424—54 5 Claims

Compositions for the removal of dental plaque and calculus containing combinations of one, two or three of

the active agents: dextranase, 1,6-bis-(2-ethylhexyl-biguanido)hexane dihydrochloride and sodium hexamethaphosphate together with or without added detergents, surfactants and antimicrobial ingredients.

3,562,386

WAXLIKE SOLID MATERIALS

Shigeo Kawamura, Urawa, and Keishiro Shirahama and Koji Tomuro, Tokyo, Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Mar. 14, 1966, Ser. No. 534,150

Claims priority, application Japan, July 5, 1965, 40/39,967

Int. Cl. A61k *27/00, 9/02*

U.S. Cl. 424—80 17 Claims

A solid low melting-point, wax-like, single-phase material is obtained by dissolving one part by weight of sorbitol into a total of about 0.3 to 4 parts by weight of glycerine and/or an alkylene diol having two to six carbon atoms under mild heating and then permitting solidification. It is useful as a suppository and may carry medicaments.

3,562,387

MINK VIRUS ENTERITIS VACCINE AND METHOD FOR THE PRODUCTION THEREOF

Lloyd H. Lauerman, Jr., Middleton, Wis., assignor, by mesne assignments, to The Mogul Corporation, a corporation of Ohio

No Drawing. Filed Dec. 1, 1967, Ser. No. 687,152

Int. Cl. C12k *5/00, 7/00, 9/00*

U.S. Cl. 424—89 10 Claims

A vaccine for protecting the Mustelidae family against virus enteritis and the Felidae family against panleukopenia. The vaccine is prepared ffrom mink enteritis virus propagated in kitten kidney tissue cultures. The tissue-culture propagated mink enteritis virus is harvested in one to six days after cell infection, and then inactivated.

3,562,388

TREATMENT FOR MAMMALS INFECTED WITH PATHOGENIC BACTERIA

Khe Siang Liem, Van Houtenlaan, Weesp, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y., a corporation of Delaware

No Drawing. Filed Sept. 16, 1969, Ser. No. 858,509

Int. Cl. A61k *27/00*

U.S. Cl. 424—180 8 Claims

Compositions containing lactulose have been found to be effective in the treatment of mammals infested with pathogenic gram negative bacilli such as the Salmonella species.

3,562,389

TREATMENT OF PSORIASIS WITH WALNUT POD EXTRACT

Keith R. Comfort, 25 Pickering Ave., Fremont, Calif. 94536

No Drawing. Filed Oct. 30, 1968, Ser. No. 772,013

Int. Cl. A61k *27/00*

U.S. Cl. 424—195 2 Claims

Natural fluid extract of walnut hulls is used in treatment of psoriasis by applying the fluid to afflicted areas of the skin.

3,562,390

COMPOSITIONS AND METHODS EMPLOYING CHEMOSTERILANT HALOETHYL ETHYLENEGLYCOL PHOSPHITES

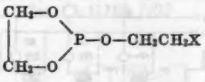
Philip C. Hamm, Glendale, Mo., assignor to Monsanto Company, St. Louis, Mo., a corporation of Delaware

No Drawing. Filed Oct. 23, 1967, Ser. No. 678,153

Int. Cl. A01n *9/36*

U.S. Cl. 424—209 4 Claims

Compounds of the following formula are insect chemosterilants:



wherein X is halogen (Cl, Br, F and I).

3,562,391

METHOD OF SUPPRESSING INFLAMMATION IN MAMMALS

Adolph Edward Sloboda, New City, N.Y., and Victor John Bauer, Montvale, N.J., assignors to American Cyanamid Company, Stamford, Conn., a corporation of Maine

No Drawing. Filed June 17, 1969, Ser. No. 834,161

Int. Cl. A01n *9/12*

U.S. Cl. 424—322 5 Claims

This disclosure describes compositions of matter useful for suppressing inflammation in mammals and the method of suppressing inflammation in mammals therewith, the active ingredients of said compositions of matter being certain substituted 1-phenyl-1-alkyl-2-thioureas.

3,562,392

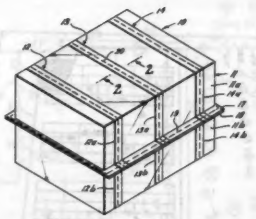
PACKAGE FOR BUNDLE OF GOODS

William Gordon Mylius, % Del Industries, 407 N. Bryan, Houston, Tex. 77011

Filed Jan. 31, 1969, Ser. No. 795,520

Int. Cl. B65d *75/30, 85/62*

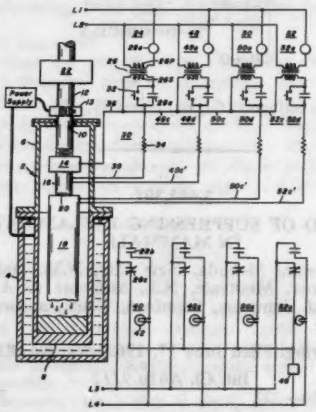
U.S. Cl. 206—46 1 Claim



A package formed of a thin layer of polyethylene material surrounding the bundle for rendering same waterproof and having one or more tie bands encircling the bundle for tying it together. Each tie band is formed by folding a portion of the polyethylene material over an adjoining portion of the polyethylene material. The folds of the tie band or bands are fused together at points along the longitudinal dimension thereof.

ELECTRICAL

3,562,393
DETECTOR CIRCUIT FOR CONSUMABLE ELECTRODE FURNACE
Harold S. Jackson, Troy, N.Y., and Jack W. Skinner, New Kensington, Pa., assignors to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa., a corporation of Pennsylvania
Filed Aug. 21, 1969, Ser. No. 854,355
Int. Cl. F27d *11/02;* **H05b** *3/00*
U.S. Cl. 13—9 **9 Claims**

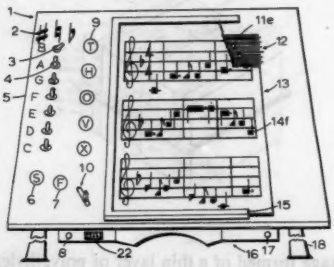


Detector circuitry for indicating progress of melting of an electrode in a consumable electrode furnace having an isolated alternating current source transformer coupled to a detector circuit which is series connected to the electrode, and signaling alarm means in an isolated circuit relationship.

ERRATUM

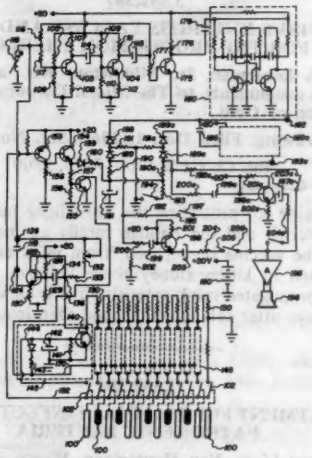
For Class 13—18 see:
Patent No. 3,561,029

3,562,394
ELECTRONIC MUSICAL INSTRUMENT WITH FINGER-DEPRESSABLE NOTE HEADS ON MUSICAL SCORE
Paul Edwin Kiepe, 113 Village Lane, Boise, Idaho 83702
Filed Feb. 18, 1969, Ser. No. 800,094
Int. Cl. G09b *15/04;* **G10h** *5/00, 1/00*
U.S. Cl. 84—1.01 **14 Claims**



An electrically operated musical device with controls and tones resembling an electric organ, whose tunes are programmed by exchangeable scores that the performer plays by finger pressure seriatim upon their semiattached note heads. When in playing position, a score adapted for the device, that may be a page in a book of such scores, is—in effect—its keyboard, being in preferred size somewhat larger than conventional sheet music to make room for note heads big enough for the finger tips. Finger pressure upon each such note head transfers its effect to subjacent metallic connective pieces. Each such metallic piece, when it descends, connects electrically across an appropriate pair of subjacent conductor bars that interconnect with the pitch-determining electronic elements of an associated control console and oscillator-emplifier-loudspeaker system. The performer need not know the code of musical scoring to play a tune; the score in playing position determines for him what note sequence will issue forth as he touches the note heads one after the other.

3,562,395
MONOPHONIC MUSICAL TONE SYSTEM WITH SINGLE KEYED OSCILLATOR, PEDAL CLAVIER, AND PERCUSSION ARRANGEMENT
Richard H. Peterson, 11748 Walnut Ridge Drive, Palos Park, Ill. 60464
Filed July 2, 1969, Ser. No. 838,577
Int. Cl. G10h *1/02, 5/06*
U.S. Cl. 84—1.01 **3 Claims**

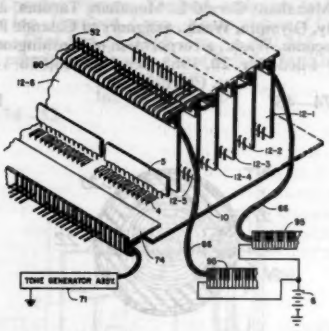


In a monophonic musical instrument, a single oscillator is used to selectively produce any of several musical notes. Electronic switches are used to tune the oscillator, and a memory system is provided so that percussive sounds can be produced. Tuning, and signal gating functions are controlled by a single, one pole, one throw, keyswitch associated with each playing key of the instrument.

3,562,396
ELECTRONIC GATING AND COMPONENT ASSEMBLY FOR ELECTRONIC MUSICAL INSTRUMENT
Richard H. Peterson, 11748 Walnut Ridge Drive, Palos Park, Ill. 60464
Filed July 24, 1969, Ser. No. 844,383
Int. Cl. G10h *1/00*
U.S. Cl. 84—1.01 **10 Claims**

Many hundreds of electronic components, including semiconductors and resistors, that comprise the electronic gating and switching circuitry for an electronic organ, are assembled in a compact geometrical space, and arranged to minimize problems of electrostatic coupling between input and output conductors. All components are wired using wire

with solder-through insulation. The wiring is routed in channels in a manner permitting dip soldering of all components



and cable connections. Several hundred connections are soldered in each dipping operation.

3,562,397

ELECTRONIC MUSICAL INSTRUMENT WITH BUILT-IN TAPE RECORDER

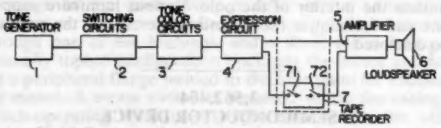
Yasuji Uchiyama, Hamakita-shi, and Mikio Ogi and Maki Yamashita, Hamamatsu-shi, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed May 6, 1968, Ser. No. 726,945

Claims priority, application Japan, May 6, 1967, 42/28,503;42/28,502;42/28,504

Int. Cl. G10h *3/04;* **G11b** *31/00*

U.S. Cl. 84—1.02 **6 Claims**



A tape recorder is variously connectable by switching to one or more parts of the electrical circuitry of an electronic musical instrument, the switching being readily controllable by the instrument player, whereby a musical piece being played can be recorded and subsequently reproduced through a part of the circuitry and the loudspeaker(s) of the instrument, and, moreover, the instrument can be simultaneously played as a recording is being so reproduced through the same loudspeaker(s).

3,562,398

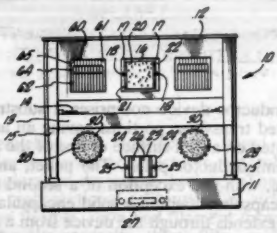
PLAYER PIANO SIMULATOR WITH BUILT-IN TAPE RECORDER

Le Roy Benjamin, 501 N. Highland, Hollywood, Calif. 90036

Filed Feb. 20, 1969, Ser. No. 800,928

Int. Cl. G10f *5/00*

U.S. Cl. 84—1.03 **14 Claims**



A model player piano is disclosed that simulates certain operations of a player piano while reproducing, through tape recording means, the musical sounds of an authentic piano.

3,562,399

ELECTRONIC MUSICAL INSTRUMENT WITH MANUAL ROD CONTROLLED SPECIAL EFFECTS AS VIBRATO AND THE LIKE

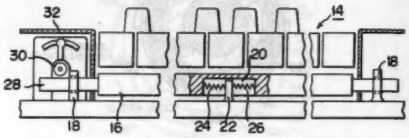
Takao Yamauchi, and Shuji Muraki, Hamamatsu-shi, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed May 9, 1968, Ser. No. 728,219

Claims priority, application Japan, Apr. 20, 1967, May 29, 1967, 42/42190;42/44925

Int. Cl. G10h *1/02*

U.S. Cl. 84—1.25 **6 Claims**



An electronic musical instrument comprising a manual keyboard for selectively switching the tones, a manually operable rod movably mounted in front of said manual keyboard and extending throughout substantially the full width thereof, and an electric transducer actuated by the movement of said manually operable rod to produce certain musical effect such as vibrato, tremolo or the like. The transducer may be a variable impedance or transformer, a light-shutter-photocell arrangement, or a switch adapted to influence the tone generators.

3,562,400

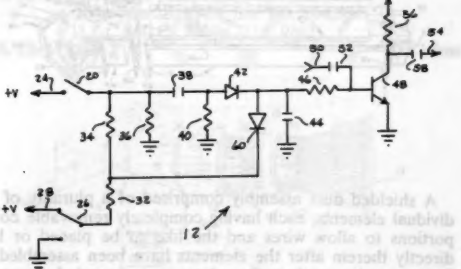
PERCUSSION KEYER WITH PEDAL SUSTAIN FOR ELECTRONIC MUSICAL INSTRUMENT

Royce L. Cutler, Houston, Tex., assignor to G-C Electronics, Inc., a corporation of Texas

Filed Feb. 20, 1968, Ser. No. 706,918

Int. Cl. G10h *1/02*

U.S. Cl. 84—1.26 **4 Claims**

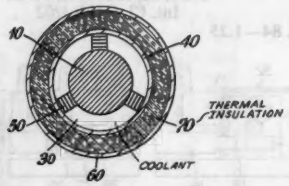


A percussive musical note is simulated. A switch passes a pulse to an RC circuit which differentiates the leading edge. The formed signal simulates a percussive instrument. A second switch adds a sustained voltage to the pulse. A diode blocks part of the discharge path of the RC circuit and extends its decay time. Hence the note may be short or sustained.

3,562,401
LOW TEMPERATURE ELECTRIC TRANSMISSION SYSTEMS

Hugh M. Long, Tonawanda, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation of application Ser. No. 642,612, Feb. 27, 1967, now abandoned, which is a continuation-in-part of application Ser. No. 395,953, Sept. 11, 1964, now abandoned. This application Mar. 3, 1969, Ser. No. 806,011
Int. Cl. H01b 7/34, 9/04
U.S. Cl. 174—15 5 Claims

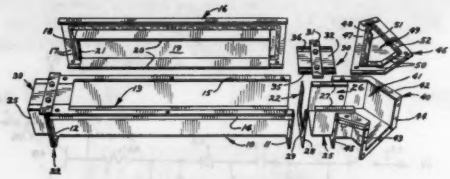


This invention provides a low temperature electrical transmission system which is defined by an elongated conduit having at least one electrical conductor internally positioned within said conduit, an outer jacket surrounding said elongated conduit and a circulating cryogenic dielectric cooling liquid located between the electrical conductor and the elongated conduit for simultaneously cooling and electrically insulating the conductor from the conduit and from the outer jacket. Thermal insulation is positioned between the outer jacket and conduit to prevent heat inleakage.

3,562,402
ELECTRICALLY AND MAGNETICALLY SHIELDED LAY-IN WIREWAY APPARATUS

John Michael Dwyer, Elk River, Minn., assignor to Federal Cartridge Corporation, Minneapolis, Minn., a corporation of Minnesota

Filed July 3, 1968, Ser. No. 742,377
Int. Cl. H05k 9/00
U.S. Cl. 174—35 5 Claims



A shielded duct assembly comprised of a plurality of individual elements, each having completely removable cover portions to allow wires and the like to be placed or laid directly therein after the elements have been assembled to form a continuous duct. Complete magnetic and electrostatic shielding is accomplished through the establishment of a continuous current conducting path through means disposed in the sealing gaskets for the removable cover portions and intermediate adjacent individual members of the duct assembly and the further establishment of a parallel, continuous magnetic flux conductive path through the use of suitably configured joint forming members intermediate the ends of individual conduit sections whereby magnetic flux energy is shunted toward the interior of the duct in areas of flux concentration occurring at laterally outwardly opening joints, or discontinuities in the duct assembly.

3,562,403
RESIN COATED WOODEN POLES AND LIGHT STANDARDS INCORPORATING SAME

Victor C. Monahan; Gerald L. Monahan, Tacoma, and Clyde Y. Cundy, Olympia, Wash., assignors to Cascade Pole Company, Tacoma, Wash., a corporation of Washington

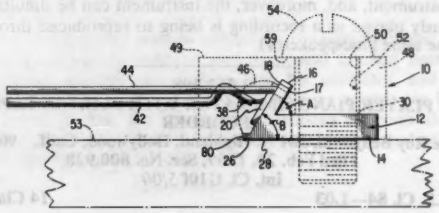
Filed Mar. 20, 1968, Ser. No. 714,628
Int. Cl. H02g 7/20
U.S. Cl. 174—45 10 Claims

Resin coated, preservative impregnated wooden poles having one or more longitudinal kerfs, for stress relieving and ventilation purposes, at least one kerf being cut to a depth slightly greater than the thickness of the sapwood of the pole. A shielded electrical conduit is emplaced in one such kerf and covered by a wood putty or like filler restoring the surface profile of the pole, and the pole is encased to a thickness of at least about one-tenth inch with a sprayed-on resin mix, such as a mixture of chopped glass fibers and catalyzed polyester resin. Modifications include a covering of cellophane, paper or the like applied between the pole and the plastic coating especially when an oil-base preservative is used, and a top cap to prevent entrance of moisture and to ventilate the interior of the pole. Various luminaire support arms and techniques for mounting thereof on the pole are also disclosed.

3,562,404
SEMICONDUCTOR DEVICE

Robert J. Satriano, Colonia, N.J., assignor to RCA Corporation of America, a corporation of Delaware

Filed Dec. 31, 1968, Ser. No. 788,182
Int. Cl. H01l 1/12
U.S. Cl. 174—52 5 Claims

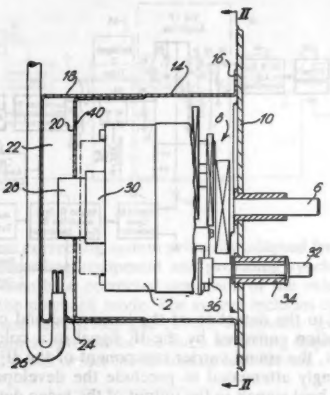


A semiconductor device comprises a substrate including two connected transverse portions having an acute included angle. Mounted on a first surface of one of the substrate portions is a semiconductor pellet. The pellet, and portions of the substrate, with the exception of a second substrate surface, are encapsulated within a solid encapsulating material. An opening extends through the device from a surface of the encapsulating material to the substrate second surface. The substrate first surface is transverse to the said encapsulating material surface and at an acute angle with the substrate second surface.

3,562,405
FLAME- AND/OR EXPLOSION-PROOF CASINGS

Ernest Stanley Ashford, Nutley, Sussex, and Lawrence Dilger, South Croydon, Surrey, England, assignors to Veeder Industries Inc., Hartford, Conn., a corporation of Connecticut

Filed Jan. 27, 1969, Ser. No. 842,410
Claims priority, application Great Britain, Jan. 26, 1968, 4245/68
Int. Cl. H05k 5/04
U.S. Cl. 174—52 5 Claims

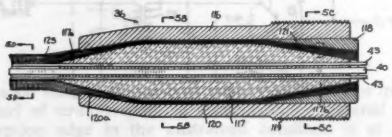


A motor drive assembly for use in fuel-dispensing installations comprising a structural base plate, a pair of elongated outwardly projecting bushings integrally mounted within openings in the base plate, a drive motor subassembly mounted on the base plate having an output shaft extending through one of the bushings, and a sheet metal casing of generally tophat configuration enclosing the motor and having a peripheral flange welded to the base plate for enclosing the motor. A motor switch is mounted within the casing, a switch-operating shaft is rotatably mounted in the other bushing for operating the motor switch and an electrical lead cable to the motor extends through a funnellike opening in the casing having an inwardly projecting flange to which the lead cable is bonded.

3,562,406
END COUPLING FOR FAIRED CABLE

Edwin C. Uhlig, and Robert C. Kohrn, South Bend, Ind., assignors to Uniroyal, Inc., New York, N.Y., a corporation of New Jersey

Original application Nov. 22, 1967, Ser. No. 685,076. Divided and this application Jan. 21, 1969, Ser. No. 810,064
Int. Cl. H02g 15/02; F16g 11/05
U.S. Cl. 174—74 8 Claims

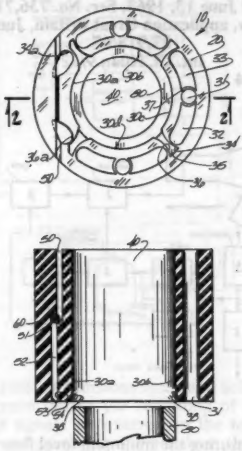


An end coupling for connecting faired underwater guidance cables to associated structures, e.g. submerged detection and exploration devices, is disclosed. The cable body, which has the cross-sectional contours of an airfoil, includes a relatively less flexible, resin and filament forward strength member, preferably generally channellike or U-shaped in cross section, and a relatively more flexible, syntactic foam aft or tail member. In the manufacturing process, extra lengths of the filaments are left to protrude from the ends of the final cable body, and the coupling construction includes separable telescoping elements between which the filaments may be threaded and clamped.

3,562,407
HEIGHT-ADJUSTABLE, INSULATING COLLAR CLIP FOR ANCHORING WIRE TO ELECTRIC LIVESTOCK FENCE POSTS

Robert E. Beebe, 2050 N. 94th St., Omaha, Nebr. 68134

Filed Apr. 18, 1969, Ser. No. 817,413
Int. Cl. H01b 17/16; A01k 3/00
U.S. Cl. 174—175 6 Claims

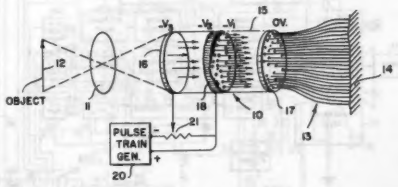


This invention provides a novel insulating collar clip, for retaining the electric wire, which collar clip is positioned on the livestock fence post by forcing it down around the outside surface of the post, and is adjustably movable up and down the post with manual force so as to humanely contain livestock of various sizes and ages within the perimeter of said electric fence; this, without requiring multiple strands of wire, or resetting of fence posts to various heights.

3,562,408
HAPTICON VISUAL SUBSTITUTION SYSTEM

Carter C. Collins; Frank A. Saunders, Mill Valley, and Julius M. Madey, San Anselmo, Calif., assignors to The Institute of Medical Sciences, San Francisco, Calif.

Filed Mar. 5, 1969, Ser. No. 804,550
Int. Cl. H04n 7/18, 9/02
U.S. Cl. 178—5.2 22 Claims



A multiple anode photomultiplying image tube is provided employing an image intensifier structure and an array of anodes for converting visible information into patterned electrical signals. A modulating source associated with the tube assures that the electrical signals exhibit particular characteristics; and such signals are conveyed to an array of electrodes in contact with the skin of a subject, to be perceived by the subject as a conceptual image. The photomultiplying

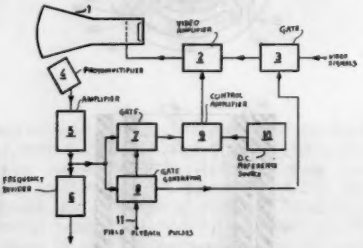
image tube can be mounted in or on spectacles, or on the head of the subject. Arrangements are disclosed for providing black and white information, color information, and stereoscopic information to the subject, and for using the eyes to aim the system at any desired object.

3,562,409

CIRCUIT ARRANGEMENTS INCLUDING A COLOR DISPLAY CATHODE-RAY TUBE OF THE INDEX TYPE

Kenneth George Freeman, Horley, and Michael Compton French, Horsham, England, assignors to U.S. Philips Corporation, New York, N.Y., a corporation of Delaware. by mesne assignments to

Filed June 13, 1968, Ser. No. 736,712
Claims priority, application Great Britain, June 16, 1967, 27,918/67
Int. Cl. H04n *9/22*
U.S. Cl. 178—5.4 **9 Claims**



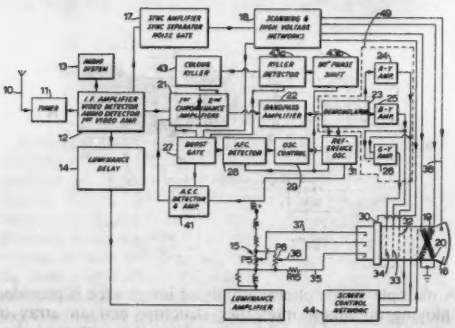
A circuit for ensuring the minimum level flow of current in an indexing type color cathode ray display tube in order to prevent loss of the indexing signal during a scanning period. A gate is provided to prevent application of video signals to the display tube during the first few lines of each field, and during this time a control signal is produced from the indexing signal corresponding to the desired black level. The control signal thus produced is applied to the display tube for the remainder of the field.

3,562,410

COLOR TONE CONTROL NETWORKS FOR COLOR TELEVISION RECEIVERS

John D. Lovely, Waterloo, Ontario, Canada, assignor to Electrohome Limited, Kitchener, Ontario, Canada

Filed June 19, 1968, Ser. No. 738,166
Int. Cl. H04n *9/12*
U.S. Cl. 178—5.4 **15 Claims**



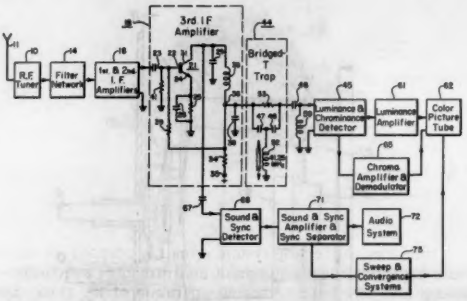
The color tone of images reproduced by a color television receiver is changed by varying the ratio of the amplitudes of at least two different color hue signals translated by the chrominance signal channel of the receiver prior to matrixing with the luminance signal.

3,562,411

INTERMEDIATE FREQUENCY COUPLING NETWORK WITH BRIDGED-T SOUND TRAP FOR A COLOR TELEVISION RECEIVER

Rocco Poppa, Addison, Ill., assignor to Zenith Radio Corporation, Chicago, Ill., a corporation of Delaware

Filed Sept. 18, 1968, Ser. No. 760,495
Int. Cl. H04n *5/44, 9/00*
U.S. Cl. 178—5.4 **10 Claims**



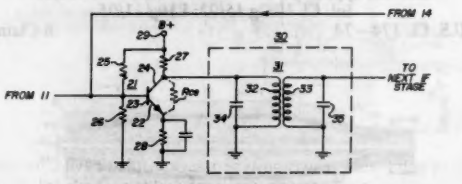
Prior to the detection of the luminance and chrominance information conveyed by the IF signal in a color television receiver, the sound carrier component of the IF signal must be strongly attenuated to preclude the development of undesired beat signals in the output of the video detector which would result in picture degradation. The sound carrier can be adequately suppressed without attenuating the color information, which is conveyed over a range or band of intermediate frequencies adjacent to and above the sound carrier, by means of a frequency-selective coupling network comprising a bridged-T trap tuned to the sound carrier frequency. The signal source, supplying the IF signal to the trap, has a capacitive internal output impedance which forms a parallel resonant circuit with the trap at a frequency around the low-frequency end of the color range (at which frequency the trap is inductive) to effectively boost the amplitude response of the coupling network for the color information.

3,562,412

VARIABLE COUPLING IF AMPLIFIER INCLUDING A DOUBLE-TUNED CIRCUIT

Emory C. Callaway, Chicago, Ill., assignor to Admiral Corporation, Chicago, Ill., a corporation of Delaware

Filed Mar. 26, 1969, Ser. No. 810,617
Int. Cl. H04n *5/50, 9/00*
U.S. Cl. 178—5.4 **6 Claims**

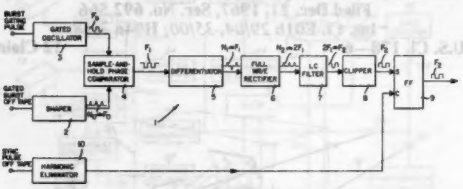


The first IF stage in a color television receiver comprises a transistor biased for forward AGC operation and having a collector impedance varying inversely with the strength of a selected television signal. A double-tuned circuit, incorporating the transistor collector impedance, displays a frequency characteristic having a maximum response approximately midway between two preselected optimum frequencies when the collector impedance is small, and maximum responses near both optimum frequencies when the collector impedance is large, whereby the receiver can be desirably fine tuned even under weak signal conditions.

3,562,413
SWITCHING SEQUENCE DETECTOR FOR P.A.L. COLOR TELEVISION

Charles H. Coleman, Belmont, Calif., assignor to Ampex Corporation, Redwood City, Calif., a corporation of California

Continuation of application Ser. No. 640,187, May 22, 1967, now abandoned. This application Dec. 15, 1969, Ser. No. 882,353
Int. Cl. H04n 9/46
U.S. Cl. 178—5.4 6 Claims

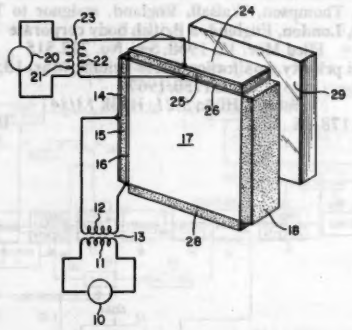


A time-base correcting system primarily adapted for use in video tape recording equipment and providing synchronous lockup and time base corrected operation of the video-tape recorder in the playback mode. The system includes circuitry receiving phase alternating line (PAL) composite television signals and which determines the burst switching sequence of the recorded signal before stable lockup is achieved.

3,562,414
SOLID-STATE IMAGE DISPLAY DEVICE WITH ACOUSTIC SCANNING OF STRAIN-RESPONSIVE SEMICONDUCTOR

Asher S. Blum, St. Louis, Mo., assignor to Zenith Radio Corporation, Chicago, Ill., a corporation of Delaware

Continuation of application Ser. No. 603,543, Dec. 21, 1966. This application Sept. 10, 1969, Ser. No. 856,855
Int. Cl. H04n 5/38, 5/44, 3/16
U.S. Cl. 178—5.4 2 Claims

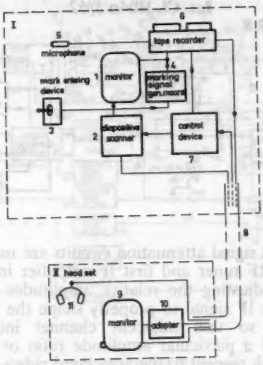


A solid state television-type image display device includes a panel of strain-responsive semiconductor material whose absorption edge in the unstrained condition is at a first predetermined wavelength, but in response to strain the absorption edge moves to a second predetermined wavelength shorter than the first. Transducer means are provided for repetitively scanning the panel with acoustic energy of a magnitude sufficient to cause movement of the absorption edge, and an intensity modulated source of light of a wavelength equal to the first predetermined wavelength is placed in registration with the panel and is intensity modulated with gray scale information. In another embodiment, three such display devices are stacked in registration with each other in order of decreasing absorption edge wavelength, to provide for full color image production.

3,562,415
METHOD AND SYSTEM FOR FURNISHING A LUMINOUS MARKER IN A SELECTED LOCATION ON THE SCREEN OF A TELEVISION RECEIVER

Friedrich Michels, and Konrad Mueller, Darmstadt, Germany, assignors to Fernseh GmbH, Darmstadt, Germany

Filed Apr. 22, 1969, Ser. No. 818,304
Claims priority, application Germany, Apr. 23, 1968, P 12 90 958.9-31
Int. Cl. H04n 5/00, 7/00
U.S. Cl. 178—5.6 19 Claims

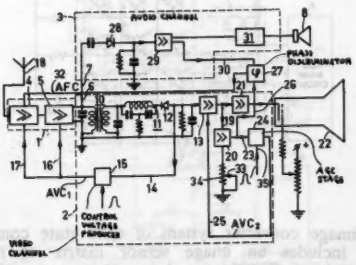


A lecturer enters a luminous mark at a selected location on a monitor screen during the recording of a television program. Marker signals are entered on the tape recording the audio of the program. At the receiver the marker signals derived from the tape are combined with vertical synchronization signals to yield a signal which increases the intensity of the cathode ray beam when the beam is in a location of the receiver screen which corresponds to the location selected by the lecturer at the transmitter.

3,562,416
TELEVISION RECEIVER A.G.C. AND A.F.C. CIRCUITS INCLUDING CASCADED AMPLIFIERS WITH DISTINCT OUTPUTS

Jan Abraham Cornelis Korver, Emmasingel, Eindhoven, Netherlands, assignor, by mesne assignments, to U.S. Philips Corporation, New York, N.Y., a corporation of Delaware

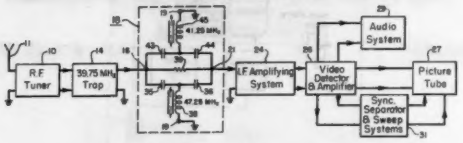
Filed July 13, 1967, Ser. No. 653,254
Claims priority, application Netherlands, July 15, 1966, 6,609,958
Int. Cl. H04n 5/52, 9/48
U.S. Cl. 178—5.8 6 Claims



An amplifier circuit for producing a first substantially constant output and a second variable output includes a loop circuit of a first amplifier to which input signals are applied, a second amplifier having an adjustable amplification factor, and a gain control circuit dependent upon the amplitude of the output of the second amplifier for controlling the gain of the first amplifier. The constant output of the second amplifi-

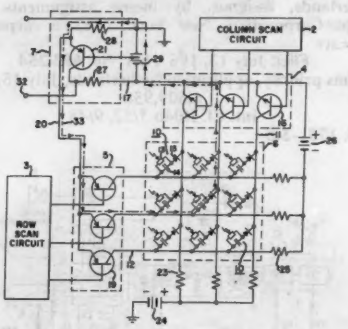
er may be employed in a phase or frequency control circuit in a television receiver, while the variable output of the first amplifier may be the video signal to be applied to a display device.

3,562,417
SIGNAL-TRANSLATING FILTER NETWORK FOR A TELEVISION RECEIVER
Rocco Poppa, Addison, Ill., assignor to Zenith Radio Corporation, Chicago, Ill., a corporation of Delaware
Filed June 17, 1968, Ser. No. 737,757
Int. Cl. H04n *5/62*
U.S. Cl. 178—5.8 **5 Claims**



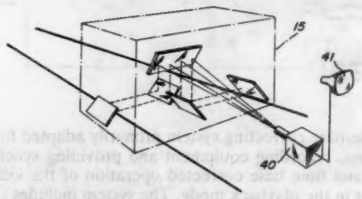
Three tuned signal attenuation circuits are usually needed between the RF tuner and first IF amplifier in a television receiver for adjusting the relative amplitudes of the components of the IF signal to properly shape the IF band-pass characteristic so that adjacent channel interference is precluded and a particular amplitude ratio or weighting is established with respect to the associated video and sound IF carriers, as is required for intercarrier operation. Two of the attenuation circuits may take the form of bridged-T traps which share the same input, output and common terminals and the same resistive sound IF carrier, while the other attenuates either the associated sound IF carrier or the adjacent video IF carrier. The use of a common bridging arm minimizes insertion loss and maximizes gain.

3,562,418
SOLID STATE IMAGE CONVERTER SYSTEM
Robert E. Glusick; Daniel C. Osborn, N. Syracuse, and Richard D. Stewart, Camillus, N.Y., assignors to General Electric Company, a corporation of New York
Filed Dec. 5, 1966, Ser. No. 599,126
Int. Cl. H04n *5/74*
U.S. Cl. 178—6 **12 Claims**



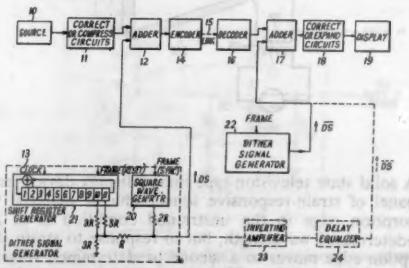
An image converter system of solid state construction which includes an image sensor matrix of nonlinear photosensitive means having charge storage properties which are varied as a function of applied light energy, the photosensitive means being sequentially interrogated through a direct low impedance path electrical connection made to the matrix for detecting said charge storage properties and generating a corresponding video output signal. Said photosensitive means each includes a photoconductor element in shunt with a storage capacitor, the pair being connected in series with a diode element. A backward bias voltage is applied across said diode elements for placing them in a normally back-biased condition, a forward bias voltage being sequentially applied to said diode elements during interrogation of the photosensitive means.

3,562,419
INSPECTION METHOD AND APPARATUS FOR TRACK ALIGNMENT
John Kenneth Stewart and Helmut R. E. von Beckmann, Columbia, S.C., assignors to Canada Iron Foundries, Limited, Montreal, Quebec, Canada
Filed Dec. 21, 1967, Ser. No. 692,566
Int. Cl. E01b *29/04, 35/00;* **H04n** *7/18*
U.S. Cl. 178—6 **12 Claims**



An inspection method and apparatus for observing the instantaneous horizontal and vertical alignment of a railroad track by optically comparing scales on a subframe of the vehicle which is referenced to and follows the longitudinal contours of the track with a datum line extending longitudinally of the track and providing on a single screen, preferably a television screen, a pictorial representation, which may be recorded on tape for reproduction, of the track vertical and horizontal alignment condition, and also in a preferred embodiment, the gauge condition or tie plate or rail anchor and tie condition.

3,562,420
PSEUDO RANDOM QUANTIZING SYSTEMS FOR TRANSMITTING TELEVISION SIGNALS
John E. Thompson, Walsall, England, assignor to The Post Office, London, England, a British body corporate
Filed Mar. 12, 1968, Ser. No. 712,515
Claims priority, application Great Britain, Mar. 13, 1967, 11750/1967
Int. Cl. H04n *5/21;* **H03k** *13/34*
U.S. Cl. 178—6 **10 Claims**

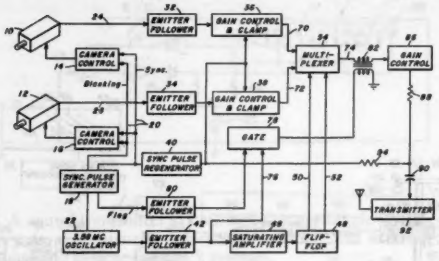


A pseudo-random quantizing system for television signals comprises a PCM transmission channel which includes a multilevel quantizer, and also includes means for generating a multilevel dither signal produced from pseudo-random binary noise signals and arranged to give a nonwhite predominantly high frequency power spectrum which is matched to the noise sensitivity characteristic of the viewer.

3,562,421
TELEVISION TIME MULTIPLEXING SYSTEM

Irving Moskovitz, Roslyn Heights, and Yoshiharu Daitoku, Northport, N.Y., assignors to Ward Electronic Industries, a corporation of New Jersey. by mesne assignments to

Filed Aug. 3, 1967, Ser. No. 658,174
Int. Cl. H04m 7/08; H04j 3/06
U.S. Cl. 178—6.8 6 Claims

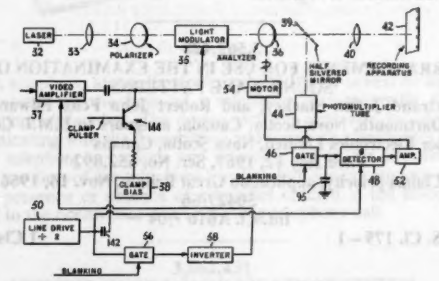


Described is apparatus for transmitting a plurality of black and white television video signals over a single cable, or on a single carrier frequency, to separate receivers. This is accomplished by means of time-sharing multiplexing techniques wherein a frequency burst on the video blanking pulse, similar to a color burst used in color television systems, is utilized at the receiving end of the system for demodulating or separating the two multiplexed video signals.

3,562,422
RECORDING APPARATUS UTILIZING PLANE OF POLARIZATION MODULATOR

Renville H. McMann, Jr., New Canaan, Conn., assignor to Columbia Broadcasting Systems, Inc., New York, N.Y., a corporation of New York

Filed Apr. 12, 1968, Ser. No. 720,901
Int. Cl. H04n 5/84; G11b 7/02; H04b 9/00
U.S. Cl. 178—6.7 10 Claims



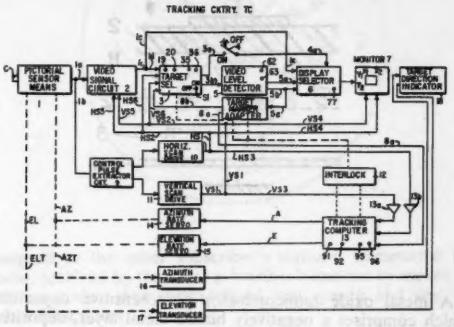
A laser produces a beam of coherent light which is polarized and transmitted through a light modulator that adjusts the orientation of the plane of polarization of the transmitted light in response to a video signal. The light transmitted by the light modulator then impinges on an analyzer. In one embodiment, the analyzer is adjusted to produce maximum extinction ratio by a motor responsive to the output of a phase detector. The inputs to the phase detector are a reference signal and a signal derived from a reference component of the video signal. The reference component of the video signal is in turn derived in part from the reference signal.

In another embodiment, the output of the phase detector controls the video gain so that the white level is properly adjusted.

3,562,423
PICTORIAL TRACKING AND RECOGNITION SYSTEM WHICH PROVIDES DISPLAY OF TARGET IDENTIFIED BY BRILLIANCE AND SPATIAL CHARACTERISTICS

Gordon J. Murphy, Glenview, Ill., assignor to Northwestern University, Evanston, Ill., a corporation of Illinois

Filed Aug. 15, 1967, Ser. No. 660,835
Int. Cl. H04n 5/14
U.S. Cl. 178—6.8 25 Claims

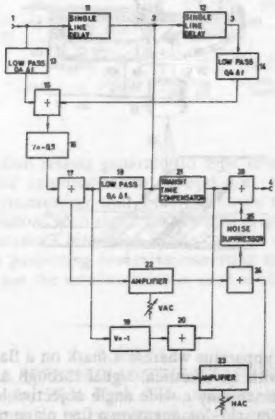


Target selector and video level detector means, operable by an attendant, select a target displayed on a monitor by spatial and brightness characteristics. Processor means analyze the selected target characteristics to obtain error signals indicative of the displacement of the target from the central region of the monitor field of view, and servomeans controlled by the error signals lock the camera to the target to effect centered display of the target on the monitor.

3,562,424
APPARATUS FOR IMPROVING THE CONTRAST FOCUSING OF A TV PICTURE BY APERTURE CORRECTING THE VIDEO TV SIGNAL ON BOTH SIDES

Ernst Legler, Seeheim, Germany, assignor to Fernseh GmbH, Darmstadt, Germany, a corporation of Germany

Filed July 25, 1968, Ser. No. 747,509
Claims priority, application Germany, July 28, 1967, F 53 089
Int. Cl. H04n 5/14
U.S. Cl. 178—7.1 4 Claims

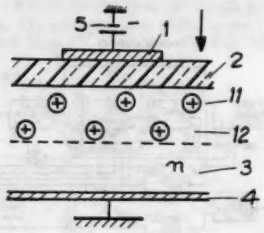


The invention is concerned with an apparatus for improving the contrast focusing of a TV picture by aperture correcting the video TV signal on both sides, that is in the vertical and horizontal directions.

3,562,425
IMAGE SIGNAL GENERATING SYSTEM

Raymond Poirier, Paris, France, assignor to CSF-Compagnie Generale De Telegraphie Sans Fil, a corporation of France

Filed Aug. 2, 1967, Ser. No. 657,937
Claims priority, application France, Aug. 10, 1966, 72,712
Int. Cl. H04n *3/14*
U.S. Cl. 178—7.2 10 Claims

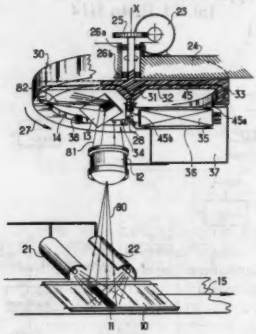


A metal oxide semiconductor photosensitive capacitor, which comprises a negatively biased metal layer, deposited on a layer of insulating material transparent to photons. This latter layer rests on a layer of doped semiconductor material, which has an ohmic contact. A load resistance connects this contact to ground. Said load collects the current flowing across the diode during negative pulses canceling the biasing. The intensity of this current is a linear function of the photon flux received by the capacitor.

3,562,426
FACSIMILE SCANNER WITH ROTATING OPTICAL FIBER AND OPTICAL CORRECTION

Jean Lavergne, Epinay-sur-Orge, France, assignor to C.I.T.. Compagnie Industrielle des Telecommunications, Paris, France

Filed Mar. 29, 1968, Ser. No. 717,344
Claims priority, application France, Apr. 4, 1967, 101,497
Int. Cl. H04n *1/04*
U.S. Cl. 178—7.6 17 Claims

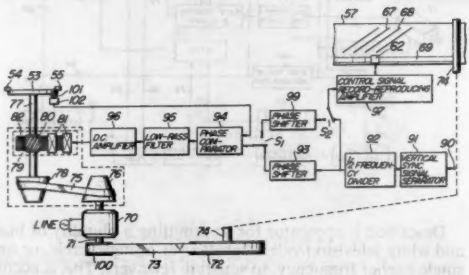


Facsimile apparatus wherein a mark on a flat document is correlated with an electrical signal through an optical link comprising essentially a wide angle objective lens projecting an image from said document on a first plane mirror, a cylindrical surface receiving said image from said first plane mirror, at least one optical fiber rotating about the axis of said cylindrical surface with an extremity close to said surface, a second plane mirror receiving an image from said optical fiber and an electro-optical device detecting the image from said second plane mirror.

3,562,427
ROTATION CONTROL DEVICE

Osahiko Yano; Keiziro Mihara, Osaka; Toshiomi Yabu, Sakai-shi, and Kaoru Imanishi, Osaka, Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan, a corporation of Japan

Filed Nov. 13, 1967, Ser. No. 682,083
Claims priority, application Japan, Nov. 17, 1966, 41/76,000
Int. Cl. F16h *7/08*; G11b *15/50*
U.S. Cl. 178—6.6 10 Claims

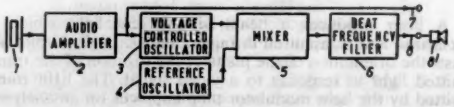


A rotation control device having two pulleys, at least one of which is a conical pulley, mounted on a driving shaft rotating at a constant speed and a driven shaft to be driven in a fixed relation with the phase of a reference signal, and a torque-transmitting belt trained around the pulleys. In the device, a signal representing the phase difference between the reference signal and a signal detected in synchronism with the phase of rotation of the driven shaft is utilized to impart a brake torque to the driven shaft for varying the engaging position between the belt and the conical pulley to thereby ensure rotation of the driven shaft at a predetermined number of rotations.

3,562,428
ARRANGEMENTS FOR USE IN THE EXAMINATION OF SOUND WAVE PATTERNS

Bertrand Julian Starkey, and Robert John Felix Edwards, Dartmouth, Nova Scotia, Canada, assignors to E.M.I. Cossor Electronics Limited, Nova Scotia, Canada

Filed July 12, 1967, Ser. No. 652,892
Claims priority, application Great Britain, Nov. 16, 1966, 50427/66
Int. Cl. A61b *7/04*
U.S. Cl. 179—1 1 Claim

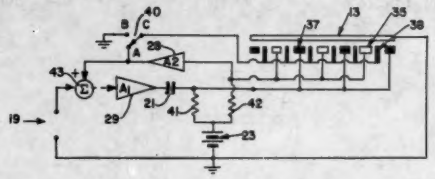


A transducer circuit for use in a stethoscope. Signals which are in an inaudible or difficult to hear frequency range are converted to signal variations in an easily heard frequency range by using modulating and mixing techniques.

3,562,429
SOUND TRANSMITTER WITH FEEDBACK AND POLARIZATION CIRCUITRY

Roger A. West, Stanford, Calif., assignor to Teachout West Electro-Acoustics, San Francisco, Calif., a partnership

Filed Apr. 29, 1968, Ser. No. 724,729
Int. Cl. H04r *19/00*
U.S. Cl. 179—1 4 Claims

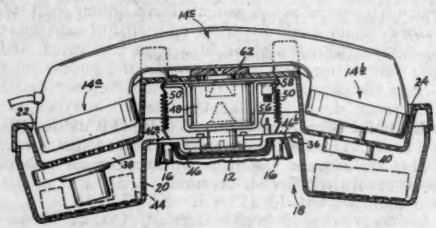


A sound transmitter system utilizing a solid electrolyte battery as a permanent polarization source, and utilizing motional and remote feedback systems.

3,562,430
TELEPHONE ANSWERING DEVICE

Claude M. Faust; Albert H. Campbell, Portland, and Harold R. Burt, Beaverton, Oreg., assignors to Ford Industries, Inc., Portland, Oreg., a corporation of Washington

Continuation of application Ser. No. 534,152, Mar. 14, 1966, now abandoned. This application Oct. 30, 1968, Ser. No. 777,972
Int. Cl. H04m *1/00*
U.S. Cl. 179—1 8 Claims



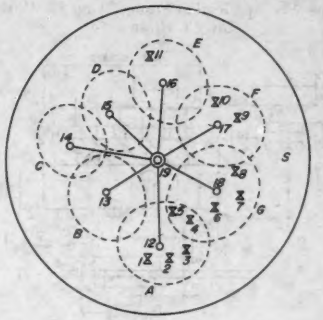
A telephone answering device adapted to be seated on and supported by the base of a telephone and to cradle the telephone's handset. The device includes apparatus for communicating with the transmitting and receiving transducers in the telephone's handset, and adjusting means for adjusting the position of the telephone's switch buttons in response to the presence or absence of a handset cradled in the device and to the occurrence of an incoming telephone call.

3,562,431
ASYNCHRONOUS COMMUNICATIONS SYSTEM

Hiroshi Inose, and Toshiharu Aoki, Tokyo, Japan, assignors to Hitachi, Ltd. and Hiroshi Inose, Tokyo, Japan

Filed Aug. 6, 1968, Ser. No. 750,511
Claims priority, application Japan, Aug. 7, 1967, 42/50314
Int. Cl. H04j *3/12*
U.S. Cl. 179—15 10 Claims

An asynchronous communication system for mobile and fixed radio communications which includes a plurality of subscriber's stations, a plurality of trunk stations and a central station, in which the subscriber's speech and associated audible signals are first modulated into three-level delta modulation pulses, then coded into a frequency-time address assigned to those subscribers, transmitted by radio, received by one of the nearby trunk stations, address decoded first to identify the subscriber, then demodulated to voice band signals, transmitted to the central office having stored program control features, switched in accordance with the dialed information to establish connection to the other subscriber's stations, transmitted to another of the trunk stations nearby the other subscriber's stations, first modulated into three-level delta modulation, then coded into address codes

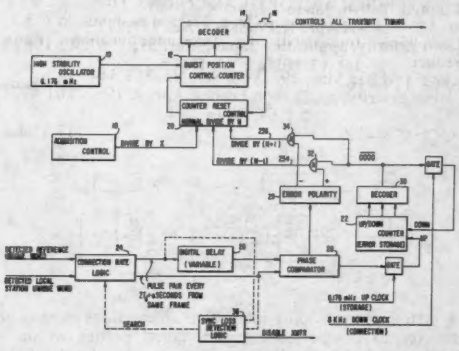


assigned to the other subscriber's stations, transmitted by radio, received by the other subscriber's stations by means of address codes, then demodulated into speech and sent to other subscribers.

3,562,432
SYNCHRONIZER FOR TIME DIVISION MULTIPLE ACCESS SATELLITE COMMUNICATION SYSTEM

Ova G. Gabbard, McLean, Va., assignor to Communications Satellite Corporation, a corporation of Washington, D.C.

Filed Nov. 16, 1966, Ser. No. 594,921
Int. Cl. H04j *3/06;* H04b *1/00*
U.S. Cl. 179—15 22 Claims



This invention relates generally to time division multiple access satellite communication systems and, more particularly, to a synchronizer unit which controls the timing of burst transmissions such that transmissions originating at different earth stations interleave in the satellite without overlapping, thus permitting several transmitting stations simultaneously to use the satellite relay in such a communication system.

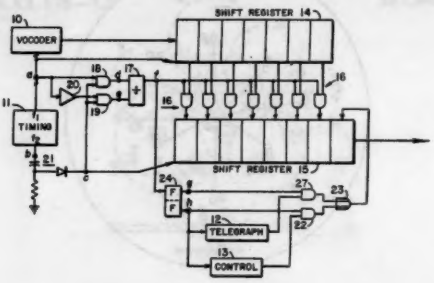
3,562,433
DIGITAL SPEECH PLUS TELEGRAPH SYSTEM

Mario Ambrosio, West Deal, N.J., assignor to the United States of America as represented by the Secretary of the Army

Filed June 27, 1968, Ser. No. 740,612
Int. Cl. H04j *3/12*
U.S. Cl. 179—15 3 Claims

A multiplex communication system for interleaving vocoder, telegraphic, and control digital signals into a single

channel. A predetermined number of vocoder digits are stored in a shift register at a relatively high bit rate. These bits are then transferred in parallel to a second shift register via a series of AND gates which are gated on at a relatively low bit rate. The telegraphic and control signals are al-



ternately inserted into the second shift register at the relatively low bit rate. The second shift register is then shifted at a rate which is the sum of the high bit rate and the low bit rate. A transmission line is connected to the output of the second shift register for transmitting the multiplexed information

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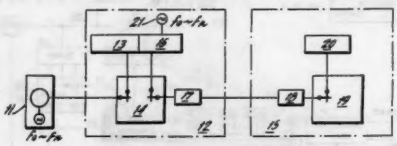
3,562,434

INTEROFFICE SIGNALING SYSTEM EMPLOYING SELECTED ONES OF THE TOUCH-TONE TELEPHONE FREQUENCIES FOR ESTABLISHING INTEROFFICE CONNECTIONS

Kazuya Ohzeki; Kimizo Shirabe, and Haruo Mochizuki, Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Apr. 1, 1968, Ser. No. 717,771
Claims priority, application Japan, Mar. 31, 1967, 42/19877
Int. Cl. H04q *1/45;* **H04m** *7/00*
U.S. Cl. 179—16 **3 Claims**



A system for providing interoffice connections as may be necessary to couple calling and called parties within a telephone network employing multifrequency signals of the Touch-Tone telephone type wherein the multifrequency signals employed to establish interoffice connections are identical with selected ones of the multifrequency signals generated by the Touch-Tone type telephone handsets to eliminate the need for frequency conversion operations and additional receivers for handling all operating frequencies and further allowing register circuits at the office of the called subscriber to remain on line until a connection is established or until any other operating function is completed.

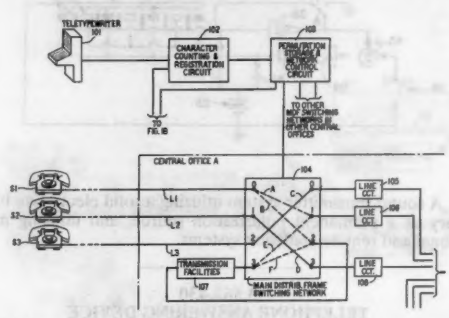
3,562,435

SWITCHING SYSTEM WITH AUTOMATED MAIN DISTRIBUTING FRAME

Amos E. Joel, Jr., South Orange, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J., a corporation of New York

Filed Dec. 27, 1968, Ser. No. 787,378
Int. Cl. H04q *1/18;* **H04m** *3/00*
U.S. Cl. 179—16 **15 Claims**

A telephone system comprising conventional station apparatus (outside plant) and associated conductors and conventional central office equipment (inside plant) and associated conductors is provided with a main distributing frame switching network upon which the outside plant conductors and inside plant conductors are terminated. Control circuitry is provided including a memory which is responsive to signals from a teletypewriter for selectively interconnecting the outside plant conductors with the inside plant conductors by exclusive linkage paths. The switching network is rearrangeable, and circuitry is provided to detect the idle or



active state of all conductors and to inhibit the execution of network interconnection commands during the active state of any affected conductor.

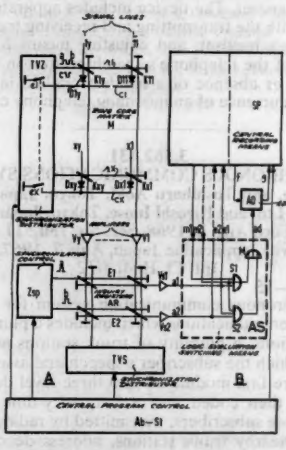
In another aspect of the disclosure, a junctor circuit is associated with the inside plant and outside plant side of the main distributing frame switching network and is controllable from a test desk so as to provide access selectively to a station circuit or to a central office circuit, or in the alternative, to provide simultaneous access to both circuits via serial insertion of the junctor circuit therebetween.

3,562,436

METHOD FOR SUPERVISION TO DETERMINE THE STATES OF COMMUNICATION LINES

Rudolf O. H. Lutgenau, Coburg, Germany, assignor to Siemins Aktiengesellschaft, Berlin, Germany

Filed Oct. 13, 1967, Ser. No. 675,114
Claims priority, application Germany, Oct. 21, 1966, S106,622
Int. Cl. H04m *3/22*
U.S. Cl. 179—18.6 **8 Claims**



A supervisory control method and circuit therefor wherein supervisory and evaluation circuits are employed to deter-

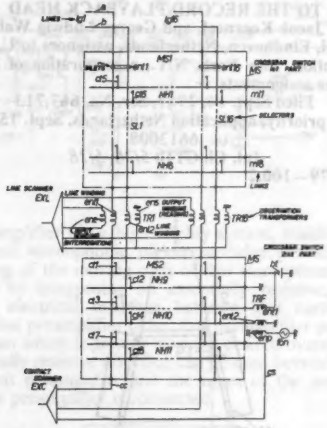
mine the states of a plurality of signal lines. Inquiry elements are operatively associated with the signal lines and are selectively connected in cyclic manner to the supervisory and evaluation circuits to provide a scanning method for successive evaluation of the signal lines. A reset pulse series is employed wherein every second inquiry pulse is preceded by a first reset pulse, and succeeded by a second reset pulse. The supervisory and evaluation apparatus provides for the evaluation of each signal line using inquiry results obtained at four different times over two reset pulse series.

3,562,437

CONDITION SENSING CIRCUIT FOR TELEPHONE SUBSCRIBERS' LINES

Pierre R. L. Marty, Paris, and Roger L. Dousset, Seine, France, assignors to International Standard Electric Corporation, New York, N.Y., a corporation of Delaware

Filed Mar. 8, 1968, Ser. No. 711,580
Claims priority, application France, Mar. 13, 1967, 98472
Int. Cl. H04m *3/22*
U.S. Cl. 179—18 **4 Claims**



Subscriber junctors for semielectronic telephone exchanges. The junctor, instead of using relays, utilizes a terminal crossbar switch. The subscriber lines are connected to the verticals of the crossbar switch through inlet connections. The verticals of the crossbar switch split into two separate parts. The lines are connected directly to the vertical of the first part. A first group of outlets on the first part of the crossbar switch is directly accessible from the inlets of the first part and leads towards common equipment in the exchange. An observation circuit is in series with each of the verticals where the crossbar switch is split. The observation circuit is sensitive to currents flowing along the lines when the lines are looped. Thus, the observation circuits on being scanned determine whether the associated line circuit is looped. There are two outlets on the second part of the crossbar switch. One leads to a current supply circuit for idle lines. The second leads to a current supply circuit for lines in a "false call" condition. Scanners connected to the second part of the switch determine whether the line is idle or free. The information secured by the scanners of the first part of the switch and the second part of the switch indicates whether the line is idle, busy or in a "false call" condition.

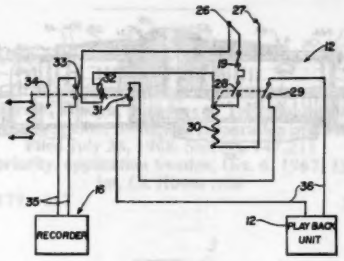
3,562,438

INTRAPLANT RADIO COMMUNICATION SYSTEM

Joseph J. Radomski, Shillington; Paul B. Day, Kenhorst, and Arthur H. Phillips, Reading, Pa., assignors to Gai Tronics, Inc., Reading, Pa.

Filed Sept. 7, 1967, Ser. No. 666,138
Int. Cl. H04m *11/02*
U.S. Cl. 179—41 **4 Claims**

This invention relates to an intraplant communication system which provides, in addition to telephone communication, radio channels of communication whereby communication may be had with roving watchmen or watchengineers who carry portable transceivers. The supplementary radio communication comprises a number of portable transceivers



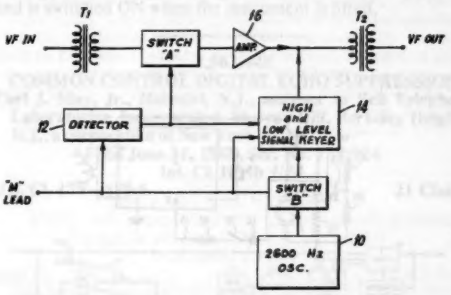
for communication with a base or fixed transmitter and receiver connected to the paging system. Such portable transceivers are equipped with a noise canceling low impedence type transmitter microphone and a separate earphone receiver.

3,562,439

TELEPHONE IN-BAND SIGNALLING SYSTEM

Leo K. Lugten, Riverside, Calif., assignor to Electronic Communications, Inc.

Filed June 24, 1968, Ser. No. 739,388
Int. Cl. H04m *1/50*
U.S. Cl. 179—84 **5 Claims**



A telephone inband signalling system converts first and second DC signal levels by detecting a change in either direction between the signals to produce a voltage of predetermined time duration which exceeds the time between dial pulses. This latter voltage is employed to simultaneously (a) short the voice path, thereby preventing feedback to the calling party, and (b) enhance the tone of a 2600 Hz. oscillator. The oscillator is then on-offed in response to the dial pulses coming over the input. At the end of the conversation, a muted 2600 Hz. tone is continuously transmitted indicating an idle line.

3,562,440

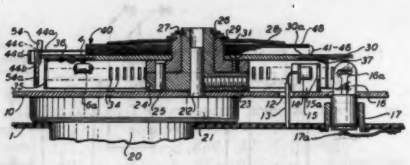
AUTOMATIC TELEPHONE DIALING APPARATUS

William C. Broekhuysen, New York, N.Y., assignor to G-V Controls Inc., Livingston, N.J., a corporation of New Jersey

Filed May 17, 1967, Ser. No. 639,175
Int. Cl. H04m *1/38*
U.S. Cl. 179—90 **16 Claims**

A single-address automatic telephone pulse-dialer employs a rotatable member with arcuately arranged indices; an elec-

trical circuit connectable to the telephone line is opened and closed once per index passage past a reference position, and



means coupled to the rotatable member suspend the switching while preselected groups of successive indices pass that position.

3,562,441

RECORDING AND/OR REPRODUCING APPARATUS WITH CIRCUIT TO INSERT AC SIGNAL INTO AMPLIFIER TO INDICATE BATTERY CONDITION

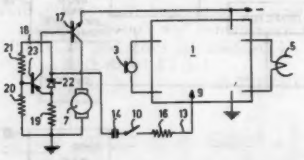
Hermann Bretschneider, Vienna, Austria, assignor to U.S. Philips Corporation, New York, N.Y., a corporation of Delaware. by mesne assignments

Filed Sept. 7, 1967, Ser. No. 666,049

Claims priority, application Austria, Sept. 9, 1966, A/8519/66

Int. Cl. G11b *15/46, 19/28*

U.S. Cl. 179—100.1 **11 Claims**



A battery operated tape recorder includes a speed control element in series with the tape drive motor. The speed control element produces an AC signal voltage in the audio frequency range in the motor circuit. A manually operable switch establishes an AC connection between the motor circuit and the recorder amplifier for coupling the audio frequency signal to the recorder loudspeaker. The condition of the battery can be easily checked by merely operating the manual switch. The presence or absence of an audio tone indicates the condition of the battery.

3,562,442

MULTI-TRACK MAGNETIC RECORDING HEADS AND METHOD OF CONSTRUCTION THEREFOR

Charles B. Pear, Jr., Centerport, N.Y., assignor to Potter Instrument Company, Inc., Plainview, N.Y., a corporation of New York

Filed Oct. 4, 1968, Ser. No. 775,228

Int. Cl. G11b *5/28, 5/42*

U.S. Cl. 179—100.2 **4 Claims**

The specification and drawings disclose a multiple track magnetic head in which long-wearing pole tip pieces are formed from a single block of material by first cutting slots in the block, next inserting isolators in the slots, then coating

the isolators with a wear-resistant material, and then grinding away the lower surface of the block to form discrete pieces.

3,562,443

COMPOSITE RECORDING/PLAYBACK HEAD WITH TWO TRIM ERASE HEADS ORIENTED AT AN ANGLE TO THE RECORD/PLAYBACK HEAD

Jules Bos; Jacob Koorneef, and George Ludwig Walther, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y., a corporation of Delaware. by mesne assignments

Filed Sept. 14, 1967, Ser. No. 667,713

Claims priority, application Netherlands, Sept. 15, 1966, 6613008

Int. Cl. G11b *5/26, 5/28*

U.S. Cl. 179—100.2 **6 Claims**

A composite magnetic recording and/or playback head having an effective gap and two erasing gaps located on either side of the effective gap, the erasing gaps each occupying an angle of between 0 and 90° with the direction of the track covered by the effective gap.

3,562,444

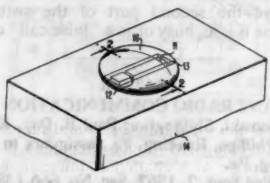
RECORDING HEAD ASSEMBLY

Helen M. Hoogendoorn; Herbert E. Liberman; Bernt Narken, and Brian Sunners, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y., a corporation of New York

Filed Feb. 29, 1968, Ser. No. 709,457

Int. Cl. G11b *5/24, 5/42*

U.S. Cl. 179—100.2 **2 Claims**



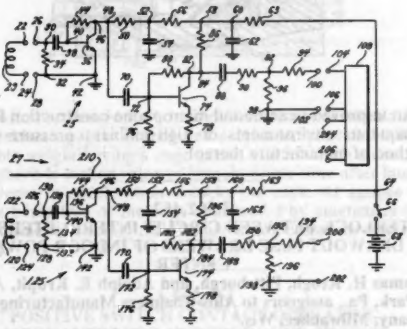
A recording head assembly includes a glass-gapped ferrite head bonded into a ceramic slider with a glass. Infrared

bonding is employed. The infrared absorption properties of the glass are increased by the addition of cupric oxide.

3,562,445
PREAMPLIFIER FOR HIGH FIDELITY SYSTEM UTILIZING A MOVING COIL STEREOPHONIC PICKUP CARTRIDGE

Neil R. McCanney, Ferguson, Mo., assignor to Pits Music Co.,d.b.a. Best Sound Company, St. Louis, Mo., a corporation

Filed Sept. 23, 1968, Ser. No. 761,683
Int. Cl. G11b *3/00;* **H03f** *13/00*
U.S. Cl. 179—100.4 **7 Claims**

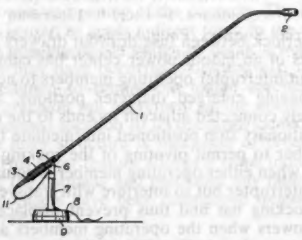


A preamplifier for a high fidelity system, which utilizes a moving coil, stereophonic, pickup cartridge, provides dynamic damping of the moving coils of that stereophonic, pickup cartridge by interposing an essentially resistive, low impedance, electrical interface between that cartridge and input of that preamplifier. Also, that preamplifier provides an overall gain which is greater than the desired overall gain, so an essentially resistive interface can be used between the output of that preamplifier and the input of the amplifier to which that preamplifier is connected.

3,562,446
ACOUSTICAL-ELECTRICAL TRANSDUCER AND SUPPORT ASSEMBLY

Konrad Wolf, Bad Voslau, Austria, assignor to Akustische U. Kino-Gerate Gesellschaft M.B.H., Vienna, Austria

Filed Feb. 7, 1968, Ser. No. 703,673
Claims priority, application Austria, Feb. 13, 1967, D1383/67
Int. Cl. H04r *1/00*
U.S. Cl. 179—152 **4 Claims**



An acoustical-electrical transducer and support assembly is composed of an elongated tubular member which supports a microphone capsule of a condenser microphone at one end and the preamplifier of the microphone at the other end with electrical circuitry extending through the tubular member connecting the capsule and the preamplifier. A counterweight member is movably positionable on the end of the tubular member opposite the microphone capsule and incorporates the preamplifier. The tubular member and its attached parts are pivotally supported on a support member at the center of gravity of the assembly. In this arrangement the microphone capsule can be selectively positioned about the support member with its preamplifier disposed in a spaced nonobstructing location on the tubular member.

3,562,447
HOOK SWITCH FOR ONE-PIECE STANDING TELEPHONE

Martinus C. W. Bakhuizen; Leif Branden, and Erling Tronslien, Tyreso, Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden, a corporation of Sweden

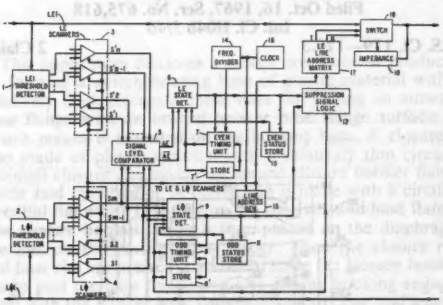
Filed July 24, 1968, Ser. No. 747,211
Claims priority, application Sweden, Oct. 6, 1967, 13725/67
Int. Cl. H04m *1/08*
U.S. Cl. 179—167 **5 Claims**

A standing one-piece telephone instrument has protruding from the bottom of its base an actuating means extending along substantially the entire peripheral outline of the bottom. This actuating means is operated by the weight of the instrument when the same is placed upon a surface. Linkages coupled to spaced-apart portions of the actuating means operate the ON-OFF switching assembly of the instrument so that the instrument is switched OFF when any part of the actuating means along the length thereof rests on the surface and is switched ON when the instrument is lifted.

3,562,448
COMMON CONTROL DIGITAL ECHO SUPPRESSION

Carl J. May, Jr., Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J., a corporation of New York

Filed June 21, 1968, Ser. No. 738,924
Int. Cl. H04b *3/24*
U.S. Cl. 179—170.6 **21 Claims**



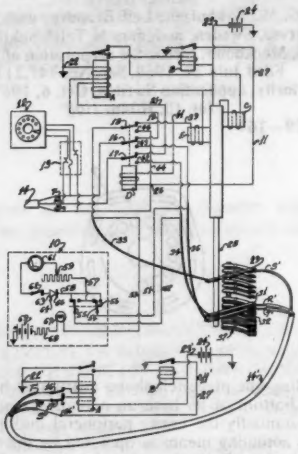
A method of, and apparatus for, accomplishing signal controlled digital echo suppression for a plurality of two-way transmission circuits is disclosed. Analogue signal levels on each line of each associated transmit-receive pair are digitized in the time slot allocated for that pair and applied to common time-shared logic which includes a time-divided memory. The common logic combines the digitized signal level information with code signals representing the past signal bearing statuses of the lines, and timing signals stored in the time-divided memory to determine if the respective present activity statuses of the pair are such that echo suppression is required.

3,562,449

PROCESS AND APPARATUS FOR TESTING TELEPHONE SELECTOR CIRCUITS AND THE LIKE

Henry A. Quick, 3413 Tal-Heim Circle, Birmingham, Ala.

Filed Dec. 22, 1967, Ser. No. 692,801
Int. Cl. H04m 3/22
U.S. Cl. 179—175.21 2 Claims



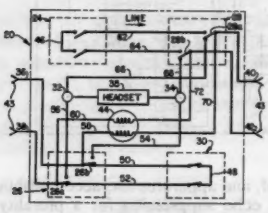
Process and apparatus for testing the continuity and polarity of telephone selector trunk lines and the operation of the dial responsive relay in selectors wired to such trunk lines. A current limiting test circuit adapted to selectively pass current a selected direction only is directly connected between the tip and ring wiper contacts of a selector switch connected to dialing apparatus, the "cut through" or "D" relay being blocked open. The sleeve wiper contact is connected to a battery through a current indicating device such as a lamp.

3,562,450

NOISE SOURCE LOCATOR

Howard L. Rosen, Star Rt. 159, Buckingham, Va. 23921

Filed Oct. 16, 1967, Ser. No. 675,618
Int. Cl. H04b 3/46
U.S. Cl. 179—175.3 2 Claims



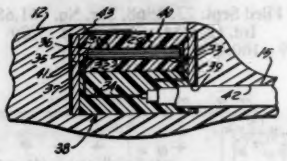
A device to be connected in series with a communication system line carrying signals, such as a telephone line, to permit rapid detection of the location of the source of unwanted noise on the line.

3,562,451

MICROPHONE AND HEADSET FOR UNDERWATER SWIMMER

Walter W. Mullen, Jr., and Ollie G. Kirkpatrick, Panama City, Fla., assignors to the United States of America as represented by the Secretary of the Navy

Filed June 11, 1968, Ser. No. 736,213
Int. Cl. H04r 17/00
U.S. Cl. 179—187 5 Claims



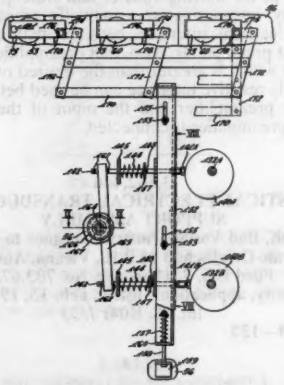
An improved headset and microphone construction for use in aqueous environments of high ambient pressure and a method of manufacture thereof.

3,562,452

INTERLOCK BETWEEN CIRCUIT INTERRUPTERS AND DRAWOUT FUSE DRAWERS OF INDOOR POWER CENTER

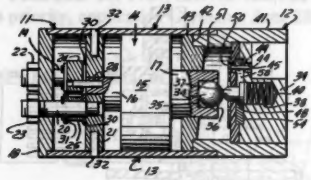
Thomas H. Keogh, Pittsburgh, and Adolph E. Krupit, Allison Park, Pa., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Oct. 18, 1968, Ser. No. 768,817
Int. Cl. H01h 9/26, 9/22
U.S. Cl. 200—50 14 Claims



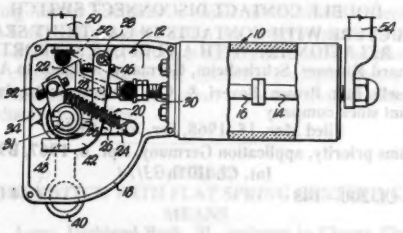
An interlock between fuse drawout drawers and circuit interrupters of an indoor power center has cams rotatable by the circuit interrupter operating members to actuate cam followers having enlarged diameter portions, a rocking bar operatively connected adjacent its ends to the cam followers, and a stationary stop positioned intermediate the ends of the rocking bar to permit pivoting of the rocking bar by a cam follower when either operating member is actuated to close a circuit interrupter but to interfere with transverse translation of the rocking bar and thus prevent displacement of both cam followers when the operating members are actuated in an attempt to close both switches simultaneously. Ganged interfering arms are rotatable between positions wherein they obstruct withdrawal of the fuse drawers and wherein the fuse drawers may be withdrawn, and means for preventing closure of either circuit interrupter when a fuse drawer can be withdrawn and for preventing withdrawal of a fuse drawer when either circuit interrupter is closed includes a longitudinally reciprocable interlocking bar having keyhole openings receiving said cam followers and parallel crank linkage means operatively connecting said interfering arms and said interlocking bar.

3,562,453
APOGEE SWITCH WITH MAGNETIC ACTUATOR
Sydney R. Crockett, Oxnard, Calif., assignor to the United States of America as represented by the Secretary of the Navy
Continuation-in-part of application Ser. No. 779,330, Nov. 27, 1968. This application Dec. 8, 1969, Ser. No. 883,079
Int. Cl. H01h *35/14*
U.S. Cl. 200—61.45 5 Claims



A switch responsive to conditions which occur when a missile reaches apogee. It includes a cylinder provided with a movable weight having a cage at one end in which a conductive sphere is locked prior to launch. Some time after launch a decrease in acceleration unlocks the cage. At apogee the sphere being free of the cage is attracted by magnetism to a ring contact encircling the plunger which closes an electrical circuit.

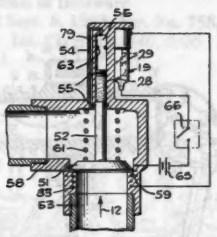
3,562,454
POSITIVE SWITCH CONTACT OPERATING MECHANISM FOR UNDERGROUND SWITCH
Philip G. Chance, Centralia, Mo., assignor to A. B. Chance Company, Centralia, Mo., a corporation of Missouri
Filed July 11, 1969, Ser. No. 841,059
Int. Cl. H01h *21/00*
U.S. Cl. 200—67 4 Claims



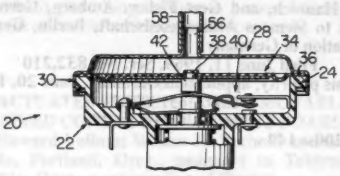
A positive switch contact operating mechanism for a vacuum interrupter unit of the type having a pair of contacts, one of which is moved relative to the other by a toggle or similar nondirect operating mechanism and wherein auxiliary lever structure assures opening of the contacts. The auxiliary lever structure is used to apply a direct force to the movable contact during opening of the switch to break a weld of the contacts which may have occurred. Alternatively, the lever structure is designed to render the toggle mechanism inoperative and preclude full movement of the operating arm from its nonoperated location to its operated location in the event that the lever structure is incapable of breaking the contact weld. This latter feature affords a visual indication of the position of the contacts and precludes any false impression that the contacts have been disengaged unless this, in fact, has occurred.

3,562,455
MECHANICAL DISPLACEMENT TYPE FLOW SWITCH WITH FLUID STATE MAINTENANCE HEATING MEANS
Malcolm M. McQueen, 19430 Marilla, Northridge, Calif. 91324
Filed Mar. 27, 1968, Ser. No. 716,510
Int. Cl. H01h *35/40*
U.S. Cl. 200—81.9 7 Claims

In a mechanical displacement type flow switch employing a mass adapted to be displaced by a flowing medium, the improvement comprising heating means for maintaining the medium in a fluid state in a region adjacent the mass, thereby affording the mass freedom of operative movement in the medium.



3,562,456
PRESSURE RESPONSIVE SWITCH CONSTRUCTION AND METHOD OF MAKING THE SAME
Gilbert Rogers, Grove City, Ohio, assignor to Robertshaw Controls Company, Richmond, Va., a corporation of Delaware
Filed May 7, 1968, Ser. No. 727,239
Int. Cl. H01h *35/40*
U.S. Cl. 200—83 5 Claims

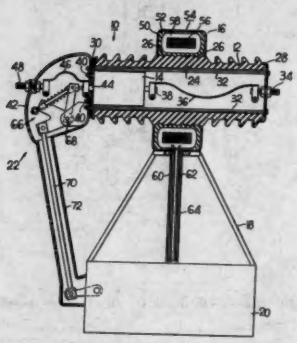


This application discloses a switch construction produced by forming a switch housing base of plastic material with a relatively thick circumferential base rim having an outward base flange with an inward hooker base flange surface. A switch means is mounted on the housing base. A closure is also made of plastic material with a relatively thin circumferential closure rim having an inward closure hooker flange inside said closure rim. A diaphragm is made with a circumferential rim which is placed on the base rim and base flange. The closure hooker flange is then placed on the diaphragm rim and on the outward base flange. Then the closure rim and base rim are pressed together to force the closure hooker flange past the base flange and into closing hooking engagement with the hooker base flange surface to close and assemble the switch construction.

3,562,457
COMBINED VACUUM CIRCUIT BREAKER AND CURRENT TRANSFORMER DEVICE
Henry L. Peek, Wellesley, Mass., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Nov. 14, 1967, Ser. No. 682,782
Int. Cl. H01h *9/56*
U.S. Cl. 200—144 2 Claims

One or more vacuum circuit breakers are mounted inside a horizontally disposed hollow skirted porcelain insulator tube having sealed ends. The insulator tube extends through and is

supported by current transformer means which have the shape of an annular torus. The current transformer means is supported on a framework which is grounded to the current



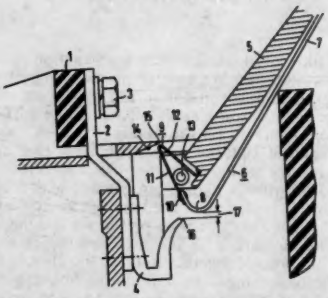
transformer means. Circuit breaker operating means, including an electrically insulating rod, extend between the circuit breaker or breakers and the lower portion of the framework.

3,562,458

DEVICE FOR FORCE-CONSTRAINED JOINING OF ARC BAFFLE PLATE WITH STATIONARY CONTACT

Joachim Hannich, and Gert Fisher, Amberg, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany, a corporation of Germany

Filed June 11, 1969, Ser. No. 832,210
Claims priority, application Germany, June 20, 1968, P 17 65 621.2
Int. Cl. H01h *33/00*
U.S. Cl. 200—144 **5 Claims**



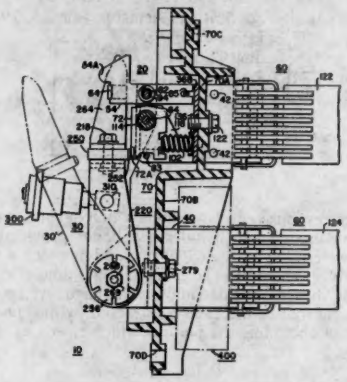
A V-shaped spring has one free end affixed to an arc baffle plate, another free end abutting the removable arc chamber and a vertex abutting and sliding on an inclined plane formed on a base member. The spring moves the arc baffle plate toward a stationary contact during mounting of the arc chamber, thereby force-constrainedly joining the arc baffle plate with the stationary contact.

3,562,459

CIRCUIT INTERRUPTER WITH IMPROVED CONTACT STRUCTURE

Fred Bould, and Richard Hauser, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa., a corporation of Pennsylvania

Filed Oct. 24, 1968, Ser. No. 770,297
Int. Cl. H01h *9/38, 33/12*
U.S. Cl. 200—146 **7 Claims**



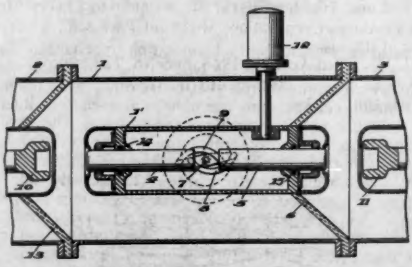
A circuit interrupter, such as a circuit breaker, comprising a relatively stationary contact structure which is adapted to be engaged by movable contact means mounted on a pivotally mounted switch or contact arm.

3,562,460

DOUBLE CONTACT DISCONNECT SWITCH STRUCTURE WITH CONTACTS IN GAS-TIGHT SEALED RELATIONSHIP WITH A TUBULAR SUPPORT

Gerhard Koerner, Schriesheim, Germany, assignor to Aktiengesellschaft Brown Boveri & Cie, Baden, Switzerland, a joint stock company

Filed Mar. 15, 1968, Ser. No. 713,448
Claims priority, application Germany, Apr. 6, 1967, B91944
Int. Cl. H01h *33/74*
U.S. Cl. 200—148 **4 Claims**



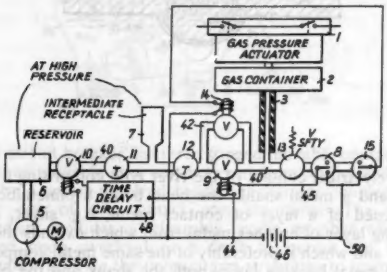
A disconnect switch for use in compressed-gas switch installations comprises two gaps arranged electrically in series within a tubular casing. Each gap which is designed for the rated isolation voltage is constituted by a fixed contact member and a movable contact member, the two movable contact members are arranged for movement in opposite directions longitudinally of themselves by means of a common actuating mechanism to engage and be disengaged from their respective fixed contact members, the two movable contact members are supported within one section of the casing established by means of a transversely placed bulkhead of

insulating material, and the two stationary contact members are located in adjacent sections of the casing.

3,562,461
GAS RESERVOIR ARRANGEMENT IN HIGH VOLTAGE SWITCH

Karl Kriechbaum, Kassel, Germany, assignor to Licentia Patent - Verwaltungs - G.m.b.H., Frankfurt, Germany

Filed June 26, 1969, Ser. No. 836,721
Claims priority, application Germany, June 28, 1968, P 17 65 677.8
Int. Cl. H01h *33/54*
U.S. Cl. 200—148 **9 Claims**

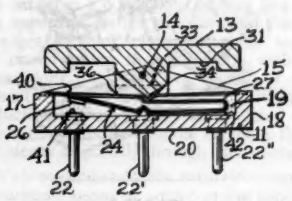


A gas operated electrical switch for opening and closing high voltage electrical lines has a gas container containing gas at the operating pressure for actuating the switch and a reservoir containing gas at a higher pressure for resupplying the container of gas after a switch actuation. The pressure reducing means includes a small intermediate receptacle which holds gas at substantially the same pressure as in the reservoir in a quantity which is sufficient to raise the pressure in the container back to the operating pressure after a first switch actuation so as to permit a second switch actuation immediately thereafter.

3,562,462
TILT SWITCH WITH FLAT SPRING CENTERING MEANS

Eric L. Long, Highland Park, Ill., assignor to Cherry Electrical Products Corporation, Highland Park, Ill., a corporation of Illinois

Filed Apr. 29, 1968, Ser. No. 724,809
Int. Cl. H01h *21/24*
U.S. Cl. 200—153 **2 Claims**



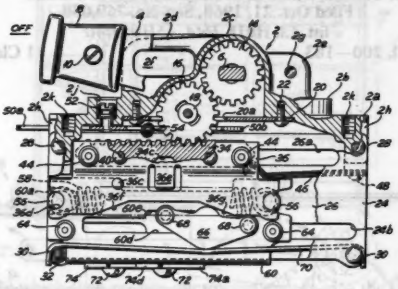
A switch having a tiltable actuator for pivoting a switch blade about a pivot terminal post in a make and break movement with respect to a pair of associated terminal contacts. A flat spring engages a cooperating flat portion on the bottom-side of the actuator, and serves to bias the actuator to the center, untilted position.

The title has been changed to: "Tilt Switch With Flat Spring Centering Means."

3,562,463
RACK AND PINION OPERATING MEANS FOR ENCLOSED CIRCUIT DISCONNECT DEVICES WITH SNAP ACTION AND POSITIVE KICKOFF FEATURES

Allan P. Charbonneau, Wauwatosa, and Allan P. Weber, New Berlin, Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis., a corporation of Delaware

Filed Sept. 6, 1968, Ser. No. 758,094
Int. Cl. H01h *3/40, 5/06*
U.S. Cl. 200—153 **5 Claims**



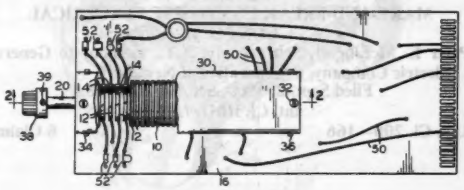
A rack and pinion stored energy handle operator mounted to an enclosure body to provide snap-action actuation of a knife switch within the enclosure. Resistance of the switch contacts to fully engage or disengage is overcome by separate positive drive features which automatically couple the movable contact structure directly to the handle.

A modification eliminates the stored energy feature to permit the same basic operator to control an automatic circuit breaker having built-in snap-action, the modified operator having a shock absorbing feature to prevent damage to the circuit breaker handle under adverse operation.

3,562,464
CAM ACTUATED SWITCH HAVING MOVABLE AND FIXED CONTACTS ON CIRCUIT BOARD

Charles Howard Vollum; Willem H. Verhoff, and Anthony E. Sprando, Portland, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg., a corporation of Oregon

Filed Oct. 7, 1968, Ser. No. 765,597
Int. Cl. H01h *1/18, 3/42*
U.S. Cl. 200—153 **6 Claims**



A cam actuated switch apparatus is described in which both its movable and fixed switch contacts are mounted on a printed circuit board providing the electrical circuit to which the switch contacts are connected. One embodiment of the switch apparatus employs a cam actuator in the form of a rotatable drum having cam elements projecting from the periphery thereof for engagement with the movable contacts. In another embodiment the cam actuator is in the form of a sliding cam member which moves parallel to the surface of the printed circuit board to actuate the movable contacts thereon. As a result of mounting all the switch contacts directly on the printed circuit board there is a considerable reduction in lead inductance, capacitance, and series resistance, which enables the present switch apparatus to be

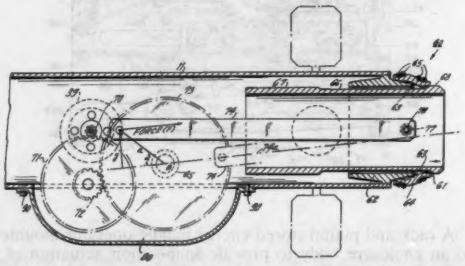
used with circuits of higher frequency response. In addition, this also greatly reduces the number of soldered connections for the switch which makes it faster and less expensive to install and easier to repair, and provides the switch with greater reliability.

3,562,465

TELESCOPIC SWITCH FOR ISOLATED PHASE BUS

Joseph A. Turgeon, Toronto, Ontario, Canada, assignor to I-T-E Circuit Breaker (Canada) Limited, Port Credit, Ontario, Canada, a limited liability company of Canada

Filed Oct. 21, 1968, Ser. No. 769,078
Int. Cl. H01h *1/44, 15/10, 3/40*
U.S. Cl. 200—163 **11 Claims**



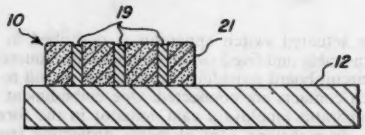
A telescopic switch for an isolated phase bus system is disclosed. The switch includes a hollow cylindrical blade which resides within one section of hollow bus and telescopes between first and second positions to engage and disengage, respectively, the jaw contacts on a second section of the bus. The mechanism for moving the blade includes a gear reduction assembly located substantially internally of the bus which houses the hollow blade. The gear reduction assembly includes a driven gear connected to an external driving shaft through an insulator, and a driving gear linked to the blade in a dead center crank arrangement to achieve high mechanical advantage at the end of the closing stroke. A single external drive shaft is connected in tandem through insulators to the gearing assembly of each of the phases whereby the telescopic switches of all phases may be operated simultaneously.

3,562,466

MAKE-AND-BREAK COMPOSITE ELECTRICAL CONTACTS

Peter E. McElligott, Schenectady, N.Y., assignor to General Electric Company, a corporation of New York

Filed Sept. 2, 1969, Ser. No. 854,418
Int. Cl. H01h *1/06*
U.S. Cl. 200—166 **6 Claims**



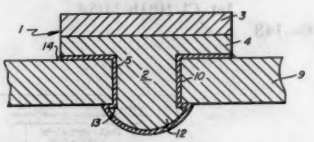
A composite electrical contact construction having a compressible carbon matrix with silver or a similar metal embedded therein. The silver area is recessed a slight distance below the carbon area on the contacting surface of the contact construction.

3,562,467

ELECTRICAL CONTACT

Victor G. Mooradian, Summit, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Newark, N.J., a corporation of Delaware

Filed June 4, 1969, Ser. No. 830,433
Int. Cl. H01h *1/02*
U.S. Cl. 200—166 **3 Claims**



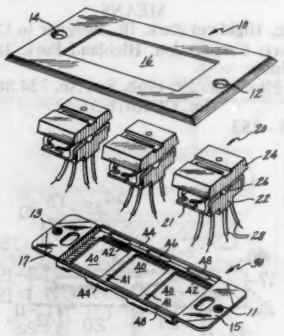
An electrical contact of the rivet type comprising a metal head and a metal shank, the head being a bimetallic head composed of a layer of contact metal, e.g. silver, and a backing layer of another metal from which extends the rivet shank and which is preferably of the same metal composition as the metal backing layer, both the shank and the backing layer, including the under surface and the peripheral sides of the backing layer being coated with a layer of metal solder having a lower melting point than the contact metal, the backing layer and the shank.

3,562,468

SWITCH MOUNTING MEANS

Joseph P. Stefani, Warwick, R.I., assignor to General Electric Company, a corporation of New York

Filed Oct. 30, 1968, Ser. No. 771,732
Int. Cl. H02b *1/10*
U.S. Cl. 200—168 **1 Claim**



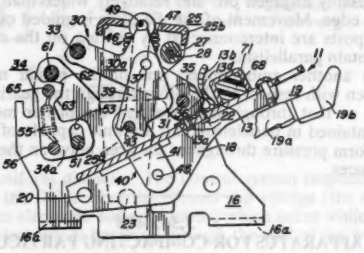
Means for mounting a wiring device in a supporting bracket is provided. More specifically, a mounting strap is formed with end portions which can be easily bent with a screwdriver or similar tool to engage receiving openings formed in a mounting bracket to securely mount the wiring device to the bracket.

3,562,469

MOLDED-CASE ELECTRIC CIRCUIT BREAKER WITH CONTACT ARM LATCH

Ronald G. Peck, Cedar Rapids, Iowa, assignor to Square D Company, Park Ridge, Ill., a corporation of Michigan

Filed Nov. 18, 1968, Ser. No. 776,412
Int. Cl. H01h 3/20, 9/20
U.S. Cl. 200—169 6 Claims



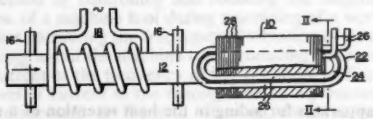
The circuit breaker has three ganged movable contact arm structures movable as a unit between open and closed positions by a spring-powered toggle mechanism coupled to a center one of the contact arm structures. The toggle mechanism includes a releasable cradle member which is released upon overload or a fault to permit the toggle mechanism to drive the contact arm structures to open position. A manual operating mechanism is provided for resetting the toggle mechanism when the contact arm structures are in the contact open position and for releasing the reset toggle mechanism for effecting closure of the contacts. During the closing operation, the cradle member interlocks with a latch on the center contact arm structure until the manual operating mechanism defeats the interlock by bending the latch by a camming action.

3,562,470

INDUCTION HEATING APPARATUS

George F. Bobart, and William A. Emerson, Ellicott City, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa., a corporation of Pennsylvania

Filed June 24, 1969, Ser. No. 835,951
Int. Cl. H05b 5/00, 9/02
U.S. Cl. 219—10.43 6 Claims



Disclosed herein in a continuous heating line is an induction heating apparatus for the supplemental discrete heating of corner edges of thick elongated metal workpieces of rectangular cross section in conjunction with heating by other means along such line, in behalf of temperature uniformity sectionally of the workpieces, which apparatus includes induction heating coil means affiliated with laminations concentrating and directing the magnetic flux produced by such coil means diagonally through such corner edges.

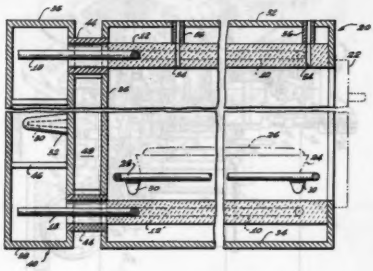
3,562,471

MICROWAVE OVEN AND ANTENNA STRUCTURE THEREFOR

Edward A. White, Fort Wayne, Ind., assignor to Technology Instrument Corporation, Newbury Park, Calif., a corporation of California

Filed Mar. 4, 1969, Ser. No. 804,176
Int. Cl. H05b 9/06, 9/02
U.S. Cl. 219—10.55 7 Claims

The invention in different forms is shown as a serpentine antenna embedded in a microwave-transparent plate, nested in one surface of such a plate, and deposited on one surface of such a plate. A pair of such plate-antenna structures are mounted in the top and bottom of an oven cavity. The center of each antenna has an integral probe extending through openings in the back wall of the cavity and into the arms of a waveguide T. Energy from a magnetron is injected into the leg of the T, and divides between the arms to excite the antennas which then radiate microwave energy into the cavity. The material of the plates serves to absorb some microwave energy, whereby to present a desired minimum load to the magnetron when it is operating while the cavity is empty. The actual oven enclosure for cleaning purposes is that defined by the plates and the portions of the walls and door between the plates. These surfaces are flat, whereby they can quickly be cleaned with a minimum of effort.

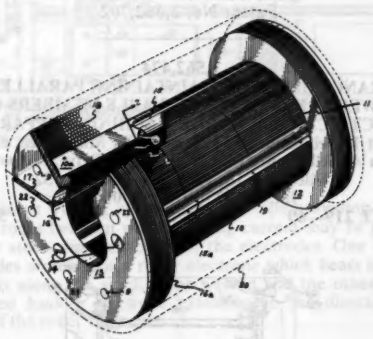


3,562,472

INDUCTION HEATER FOR ROTATING GODET

Maurice W. Cannon, and Jerome B. Tankersley, III, Roanoke, Va., assignors to General Electric Company, a corporation of New York

Filed Aug. 20, 1969, Ser. No. 851,603
Int. Cl. H05b 5/00, 9/06
U.S. Cl. 219—10.61 5 Claims



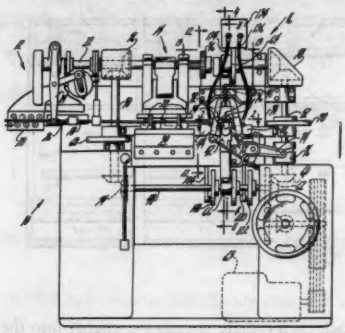
An induction heater for heating a rotating godet in a synthetic fiber processing device, the heater having a tubular, radially laminated magnetic core clamped between two transversely laminated, circular end flanges of magnetic material having inset portions extending over the ends of the core and an alternating current excited winding filling the space between the flanges, the tubular core also being aligned with openings in the flanges permitting the passage of a shaft therethrough for supporting and rotating a cylindrical godet, which surrounds the lateral surface and one end of the heater by which hysteresis and eddy currents are induced in the godet, the core laminations preventing induced heating of the core, and the circular flanges preventing the magnetic flux drag between the core and the godet.

3,562,473

MACHINE FOR PRODUCING BEARINGS AND THE LIKE FROM STRIP STOCK

Erman V. Cavagnero, and Joseph F. Loftus, Torrington, Conn., assignors to The Torrington Manufacturing Company, Torrington, Conn., a corporation of Connecticut

Filed Apr. 16, 1968, Ser. No. 721,672
Int. Cl. B23k 1/16
U.S. Cl. 219—64 23 Claims



A high production machine of the vertical four-slide type for intermittently advancing strip stock, severing blanks therefrom, forming the same into bearing races and welding end portions thereof together. The machine has a projecting horizontal mandrel with three work stations therealong respectively for preforming, forming, and preheating and/or welding. A cutoff anvil, transfer pins, broaching tools, and an expandable mandrel section are provided all with rear motion drive action and a welding mechanism is adapted for both preheat and weld operation adjacent the expandable mandrel section. A bearing race discharge track extends from the welding station to an induction furnace.

ERRATUM

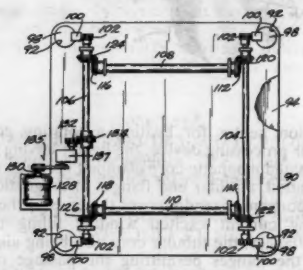
For Class 219—69 see:
Patent No. 3,562,702

3,562,474

ARRANGEMENT FOR MAINTAINING PARALLELISM BETWEEN RELATIVELY MOVABLE MEMBERS OF AN ELECTRICAL DISCHARGE MACHINING APPARATUS

Robert F. Sellmann, 9534 N. 60th St., Milwaukee, and William A. Sellmann, 11421 N. Parkview Drive, Mequon, Wis.

Filed Oct. 18, 1967, Ser. No. 676,132
Int. Cl. B23b 1/08; B30b 1/24
U.S. Cl. 219—69 5 Claims



This disclosure relates to a gear connection which insures movement, in precise parallelism throughout a range of movement, of one generally planar member of substantial planar size with respect to a second parallel planar member of comparable size.

In one specific embodiment, the gear connection is used in electrical discharge machining (hereinafter referred to as EDM) of a hard plate for a die set. The die plate is used as the electrode of the EDM unit and is moved with respect to the hard plate in accordance with the degree of electrical discharge erosion. The electrode is a score rule projecting edgewise from the die plate, and capped by an electrode tip releasably engaged on, and relatively wider than, the score rule edge. Movement of the die plate is guided on posts and the posts are interconnected by gearing on the die plate to maintain parallelism.

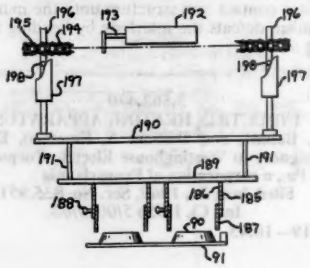
In another embodiment, one of the planar members is driven with respect to the other through the gearing connection so that throughout movement the planar members are maintained in parallelism and are thus capable of exerting a uniform pressure throughout the area between their opposed surfaces.

3,562,475

APPARATUS FOR COMPACTING PARTICULATE MATERIAL

William J. Angelotti; James R. Proffitt,Jr.; Nathaniel R. Reyburn, and Louis L. San Frotello, Erie, Pa., assignors to Owens-Illinois, Inc., a corporation of Ohio

Original application Nov. 30, 1966, Ser. No. 598,064. Divided and this application Jan. 2, 1969, Ser. No. 838,363
Int. Cl. H05b 5/00, 9/06
U.S. Cl. 219—10.67 3 Claims



An apparatus for aiding in the heat retention of a material that is increased in temperature by dielectrical heating energy. A plurality of nonmetallic annular-shaped hollow forms for encompassing each charge of thermosetting plastic material. The annular forms adapted for positioning between the electrodes of a heating device and possessing an adjustable feature.

3,562,476

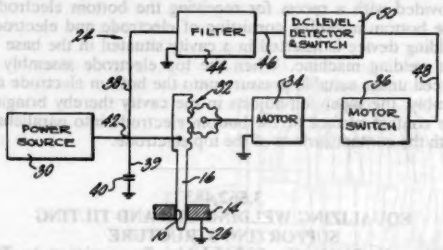
ELECTRODE DEPTH OF TRAVEL CONTROL FOR ELECTRICAL DISCHARGE MACHINING APPARATUS

Gary F. Rupert, Ypsilanti, Mich., assignor to Raycon Corporation, Ann Arbor, Mich., a corporation of Michigan

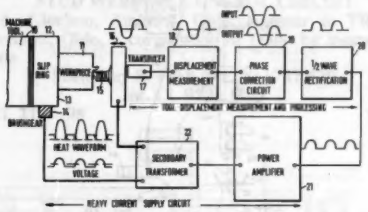
Filed Mar. 25, 1968, Ser. No. 715,888
Int. Cl. B23p 1/08
U.S. Cl. 219—69 8 Claims

An electromechanical control system for controlling the depth of travel of the electrode in the electrical discharge machining of through holes in workpieces. The control system prevents the possibility of shallow holes due to a foreshortened machining pass and also inhibits the unwanted machining of nearby surfaces caused by a machining pass which is too deep, by causing the tapered tip of the electrode

to advance just far enough beyond breakthrough point to enable the unworn portion of the electrode to machine the hole to a uniform diameter. The control system responds to changes in the DC level of the filtered gap voltage (the voltage between electrode and workpiece) which occur while the tip of the electrode is breaking through the wall of the workpiece.



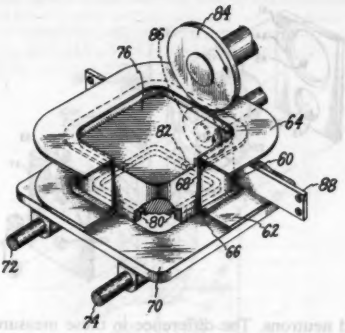
3,562,477
MACHINE TOOLS
Bernard Ronald Macmanus, Brighton, Sussex, England, assignor to National Research Development Corporation, London, England, a corporation of Great Britain
Filed Jan. 17, 1969, Ser. No. 792,105
Claims priority, application Great Britain, Feb. 5, 1968, Oct. 9, 1968, 5643/68;47912/68
Int. Cl. B23p *1/00*
U.S. Cl. 219—68 **8 Claims**



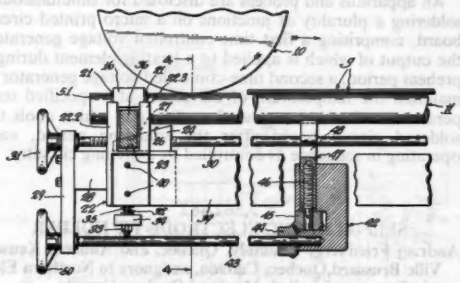
A method of controlling and reducing the amplitude of vibration of a machine tool during machining of a workpiece comprises measuring the frequency of vibration of a machine tool during use of the machine tool, producing pulses of electrical current at the frequency of the vibration, and applying the pulses of current to the cutting zone, in a predetermined phase relationship to the tool vibration, so as to heat the cutting zone, thereby reducing or at least limiting the amplitude of vibration.

3,562,478
RESISTANCE WELDING APPARATUS FOR PRODUCING SUBSTANTIALLY CREVICE-FREE WELDS
Moreland P. Bennett, and Giuliano V. Giusti, Pittsfield, Mass., assignors to General Electric Company, a corporation of New York
Filed July 13, 1965, Ser. No. 471,669
Int. Cl. B23k *11/06*
U.S. Cl. 219—82 **1 Claim**

A resistance welding technique for welding two overlapped sheet metal members to obtain a substantially crevice-free weld. A pair of resistance welding electrodes, with at least one of the resistance electrodes having a beveled face, are applied to opposite sides of the overlapped sheet metal members with the beveled electrode extending beyond the edge of one of the overlapped sheet metal members. Welding force and current are applied to the electrodes with such current and force being first concentrated, by the beveled electrode, on the edge of one of the sheet metal members. The welding force applied to the welding electrodes is substantially twice the force applied in normal resistance welding while the applied current is substantially the same as that used in normal resistance welding.



3,562,479
RESISTANCE WELDING APPARATUS
Richard N. Karl, Cortland, and Francis A. Bodenheim, Warren, Ohio, assignors to The McKay Machine Company, Youngstown, Ohio
Filed Feb. 4, 1969, Ser. No. 796,498
Int. Cl. B23k *11/06, 11/30*
U.S. Cl. 219—82 **8 Claims**

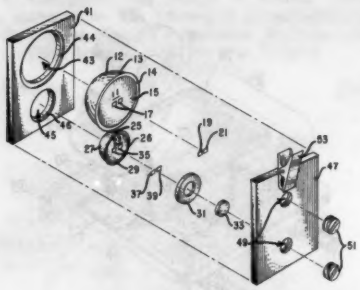


Resistance welding apparatus of the type providing a pair of electrodes between which welding current may be passed through stock disposed between the electrodes. One of the electrodes aforesaid is a roller electrode which bears against and rolls along the stock to be welded and the other is an elongated backup electrode extending in the direction of travel of the roller electrode.

3,562,480
THERMOLUMINESCENT DOSIMETER BADGE
Alvin Korba, Aiken, S.C., assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed July 25, 1969, Ser. No. 844,821
Int. Cl. G01t *3/00*
U.S. Cl. 250—83.1 **6 Claims**

A personnel dosimeter for detecting neutron radiation over a wide range of energies including two hemispheres of hydrogenous material with a ^{6}LiF phosphor and a ^{7}LiF phosphor imbedded in each hemisphere. One hemisphere having all of its surfaces covered with cadmium while the other hemisphere having only its curved surface covered with

cadmium. Each ^6LiF, ^7LiF set of phosphors in each hemisphere measures different spectra of incident and body



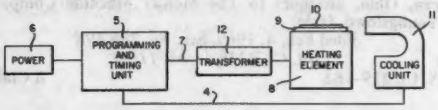
reflected neutrons. The difference in these measurements is correlatable to neutron dose over a wide range of neutron energies.

3,562,481

SUBSTRATE SOLDERING SYSTEM

Laurice J. West, 5 Jadewood Drive, Levittown, Pa. 19056

Filed Apr. 29, 1969, Ser. No. 820,086
Int. Cl. B23k *1/02*
U.S. Cl. 219—85 **4 Claims**



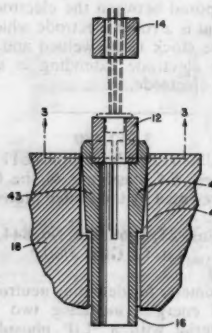
An apparatus and process are disclosed for simultaneously soldering a plurality of junctions on a micro printed circuit board, comprising a first time-controlled voltage generator, the output of which is applied to a heating element during a preheat period, a second time-controlled voltage generator to maintain the temperature of the solder at a specified temperature, and a time-regulated cooling unit which cools the soldered circuit board after the soldering period, each operating in sequence as controlled by switching circuitry.

3,562,482

SELF-ALIGNING ELECTRODE TIP HOLDER

Andrzej Friedberg, Chambly, Quebec, and Andreas Keusch, Ville Brossard,Quebec, Canada, assignors to Northern Electric Company Limited, Montreal,Quebec, Canada

Filed July 16, 1968, Ser. No. 745,277
Int. Cl. B23k *11/10*
U.S. Cl. 219—86 **7 Claims**



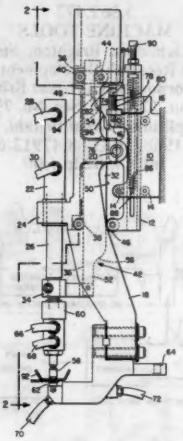
The invention relates to an electrode holding and self-aligning device on a transistor encapsulation welding machine for insuring parallelism between the contact surfaces of top and bottom electrodes. The device consists of a hollow cylindrical taper, the wall of which is partly sectioned by elongated equally distanced slots. The upper end of the taper is provided with a recess for receiving the bottom electrode. The bottom assembly consisting of electrode and electrode holding device is inserted in a cavity situated in the base of the welding machine. When the top electrode assembly is forced under suitable pressure onto the bottom electrode assembly, the taper self-adjusts in the cavity thereby bringing the contact surface of the bottom electrode into parallelism with the contact surface of the top electrode.

3,562,483

EQUALIZING WELDING GUN AND TILTING SUPPORTING STRUCTURE

William H. McMordie, Philadelphia, Pa., assignor to The Budd Company, Philadelphia, Pa., a corporation of Pennsylvania

Filed Aug. 1, 1968, Ser. No. 749,489
Int. Cl. B23k *11/10*
U.S. Cl. 219—89 **5 Claims**



A welding gun and supporting structure having a plurality of cams and cam followers for controlling the movement of the welding gun between a welding position and a stored position and when in the welding position, freeing the welding tip for equalizing on the object to be welded during the welding cycle. The fluid pressure actuating cylinder for moving the electrodes and applying pressure during the welding cycle is also utilized as the power source for moving the welding gun and supporting structure between the stored position and the welding position.

3,562,484

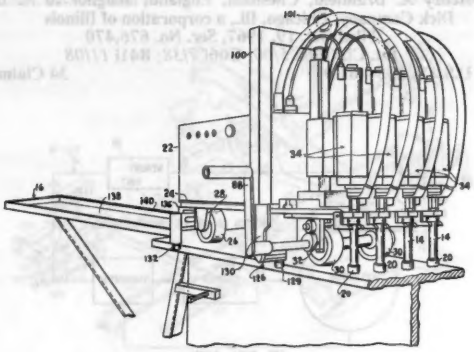
WELDING CART FOR WELDING A PLURALITY OF STUDS TO A BEAM FLANGE, OR OTHER SURFACE

Robert W. Murdock, Vermilion, Ohio, assignor to TRW Inc., Cleveland, Ohio, a corporation of Ohio. by mesne assignments

Filed June 24, 1963, Ser. No. 289,987
Int. Cl. B23k *9/20*
U.S. Cl. 219—98 **7 Claims**

7. apparatus for welding a plurality of studs to a beam in a predetermined pattern, said apparatus comprising a frame, a plurality of welding tools carried by said frame and having chucks to receive the studs, rear wheel means supporting a rear portion of said frame, a pair of front wheels, a pair of cams rotatable about a common axis in a fixed position relative to said front wheels and engageable with a portion of

said frame for raising and lowering said frame, whereby said tools are raised and lowered to facilitate loading of said chucks, and a crank for simultaneously turning said cams to

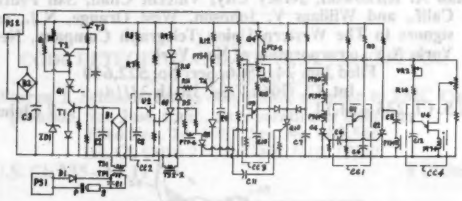


place different portions of said cams of different thicknesses in engagement with said frame portion, said crank extending outwardly from said machine beyond said frame.

3,562,485
STUD WELDING CONTROL CIRCUIT

Paul A. Glorioso, Amherst, Ohio, assignor to TRW Inc., Cleveland, Ohio, a corporation of Ohio. by mesne assignments

Filed May 8, 1968, Ser. No. 727,429
Int. Cl. B23k *9/20*
U.S. Cl. 219—98 **5 Claims**



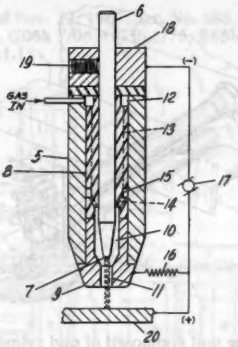
A solid state control circuit and alternating current power sources for stud welding apparatus are provided. The power sources include three-phase power for the pilot arc and single-phase power for the welding arc. The controls for stud welding apparatus where such power sources are utilized would be expected to be quite complex and costly. The controls according to the instant invention, however, are relatively simple and substantially no more involved than those heretofore employed with welding equipment using capacitors as the welding arc power source.

3,562,486
ELECTRIC ARC TORCHES

Bruce O. Hatch, Lebanon, and Henry J. Betourney, Claremont, N.H., assignors to Thermal Dynamics Corporation, a corporation of New Hampshire

Filed May 29, 1969, Ser. No. 828,837
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 **9 Claims**

An electric arc torch using a plasma forming stabilizing gas to maintain an arc between the tip of the torch electrode and a work piece to be cut, welded or otherwise treated; the electrode is held by an insulating sleeve which is heat-conductive

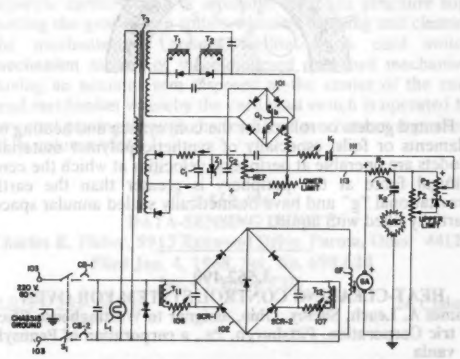


and also serves as the gas manifold in such a way as to permit operation at high power levels without reaching prohibitive temperatures at the electrode tip.

3,562,487
SYSTEMS FOR GENERATING A CONSTANT CURRENT WITHIN LIMITED VOLTAGE RANGES

Jerome W. Nelson, Upper Arlington, and Wallace Leroy Gahm, Columbus, Ohio, assignors to Esso Research and Engineering Company, Elizabeth, N.J., a corporation of Delaware

Filed June 8, 1966, Ser. No. 556,013
Int. Cl. B23k *9/10*
U.S. Cl. 219—131 **16 Claims**



Apparatus for generating a substantially constant current while allowing a predetermined amount of variation in a gated voltage suitable for use in electric arc welding employed in automatic pipe welding operations.

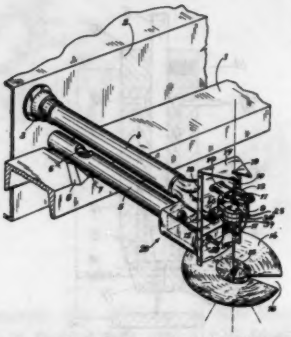
3,562,488
THREAD SINGEING DEVICE FOR TWISTING AND SPOOLING MACHINES

Willy Heimes, Krefeld, Germany, assignor to Palitex Project-Company GmbH, Krefeld, Germany

Filed Aug. 13, 1969, Ser. No. 849,825
Claims priority, application Germany, Jan. 25, 1969, P 19 03 742.4
Int. Cl. D02j *3/16*
U.S. Cl. 219—388 **11 Claims**

A thread singeing device for twisting and spooling machines with an electrically heatable singeing head which head comprises a plurality of longitudinally slotted hollow

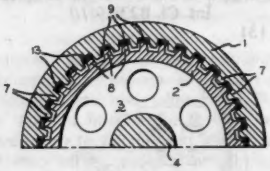
cylinders one extending around the other, while the end faces of said hollow cylinders are engaged by an annular slotted disc each consisting of a high heat-resistant insulating material, and while the unit composed of said cylinders and annular discs is encased by two slotted annular bodies supported by arms connected to a plate.



3,562,489
HEATED GODET

Erich Lenk, Remscheid-Lennep, Germany, assignor to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Filed Oct. 22, 1969, Ser. No. 868,399
Claims priority, application Germany, Oct. 24, 1968, P 18 04 777.3
Int. Cl. B21b *27/06*
U.S. Cl. 219—469 **11 Claims**

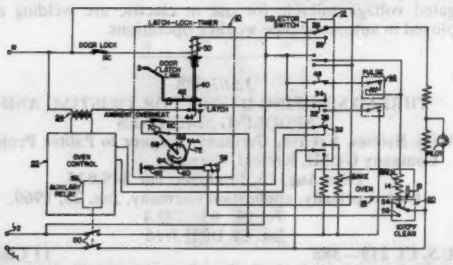


Heated godets or rollers for the conveyance and heating of filaments or foils, especially of synthetic polymer material. Godets are operable at peripheral velocities at which the centrifugal force at the periphery is greater than the earth gravitational "g" and have hermetically sealed annular space partially filled with liquid.

3,562,490
HEAT-CLEANING CONTROL SYSTEM FOR OVEN

James A. Leach, Shelby, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa., a corporation of Pennsylvania

Filed Apr. 25, 1968, Ser. No. 724,024
Int. Cl. H05b *1/02*
U.S. Cl. 219—492 **3 Claims**

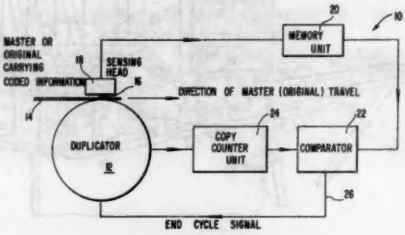


The titled apparatus in which the oven is maintained in a heat-cleaning temperature range for a period corresponding to a selected number of cycles of the oven clean-temperature thermostat.

3,562,491
MASTER CONTROLLED COPY COUNT METHOD AND APPARATUS

Henry A. Branfield, Chesham, England, assignor to A. B. Dick Company, Chicago, Ill., a corporation of Illinois

Filed Oct. 19, 1967, Ser. No. 676,470
Int. Cl. G06k *5/00*; **G06f** *7/38*; **B41i** *11/08*
U.S. Cl. 235—61.91 **34 Claims**

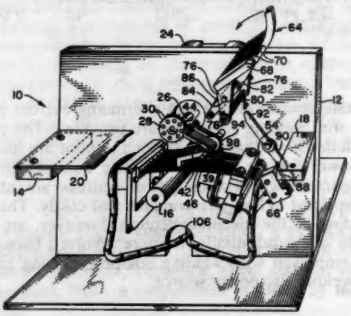


This invention relates to duplicator control units generally, and more particularly to a novel master controlled copy count method and apparatus for controlling automatically the number of copy sheets produced during the duplicating run of a duplicating machine in accordance with a code provided on a master sheet for such duplicating machine. In accordance with the method of this invention, the novel apparatus disclosed senses the code from the master sheet and controls either the programming circuit for the duplicating machine in accordance with a code-sheet count comparison or directly controls the sheet counter for the duplicating machine in accordance with the sensed code.

3,562,492
TAPE READER

Stan A. Kirkowski, Jersey City; Vincent Chan, San Pedro, Calif., and William V. Johnson, West Orange, N.J., assignors to The Western Union Telegraph Company, New York, N.Y., a corporation of New York

Filed Jan. 24, 1966, Ser. No. 522,640
Int. Cl. G06k *7/04*; **H01h** *23/14*
U.S. Cl. 235—61.11 **7 Claims**

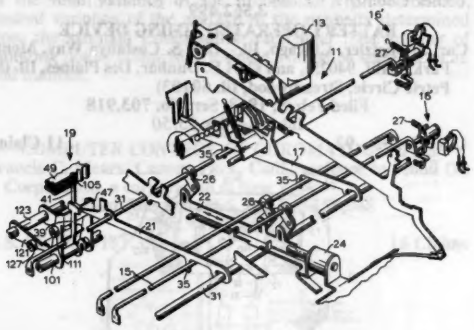


A tape reading device wherein a perforated tape travels in either direction upon a plurality of sensing star wheels. As the wheels penetrate the perforations in the tape, a circuit is energized causing signals to emanate. Associated therewith a motion sensing wheel penetrates the tape at equally spaced perforations so as to provide a continuous indication of the movement of the tape.

3,562,493
PERFORATED TAPE READER

Bernard J. Malkowski, Dearborn Heights, and John E. Hylan, Birmingham, Mich., assignors to Burroughs Corporation, Detroit, Mich., a corporation of Michigan

Filed Nov. 21, 1967, Ser. No. 684,683
Int. Cl. B41j 5/36; G06k 7/04; G11b 23/00
U.S. Cl. 235—61.11 8 Claims

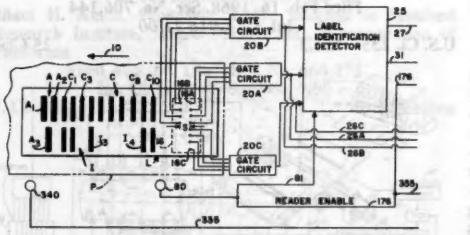


A reader for reading information represented by apertures in a tape, the apertures being arranged in the form of a binary code. The tape is step fed to a reading station to present the tape apertures to a plurality of sensing pins which are biased to sense the presence and absence of tape apertures at the station. The pins are alternately released and retracted by cyclically operable means, and movable with the pins are interposers in the form of arms which are individually fulcrumed to pivot relative to the pins. Those ones of the pins which sense tape apertures, allow the interposers to move into effective positions where they are rockable by a second cyclically operable means, the rocking of the interposers indicating the sensing of tape apertures at the station. The rocking interposers move corresponding ones of code bars which rotate bails to activate transducers, thus converting a mechanical reading of information apertures to electrical signals.

3,562,494
CODE DETECTING AND CONTROL CIRCUIT FOR SORTING ARTICLES

Warren J. Schmidt, Sunnyvale, Calif., assignor to FMC Corporation, San Jose, Calif., a corporation of Delaware

Filed Nov. 24, 1967, Ser. No. 685,565
Int. Cl. G01n 21/30; G06k 7/10, 19/00
U.S. Cl. 235—61.11 9 Claims

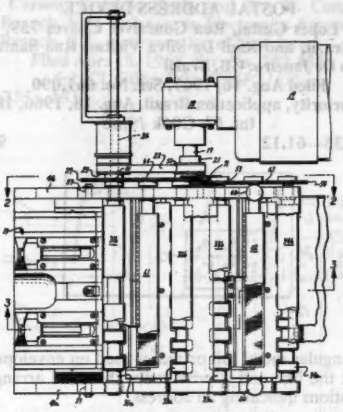


A code detecting and control circuit in which a reader senses label identification indicia to first determine whether the label viewed is the intended label and then samples destination code indicia during clock pulse time initiated by clock pulse marks on the label. Prearranged sets of light sensing devices in the reader not only read the indicia on the label but check the width of clock pulse marks and the space between successive clock pulse marks to verify the authenticity of the marks controlling time sampling of the destination code indicia.

3,562,495
PUNCHCARD READ-FEED MECHANISM

Vincent Grippi, Jr., Burlingame, Calif., assignor to Rollin J. Lobaugh, Inc., a corporation of California. by mesne assignment

Filed Nov. 22, 1967, Ser. No. 685,737
Int. Cl. G06k 7/06; G03b 1/56; B65h 27/00
U.S. Cl. 235—61.11 7 Claims

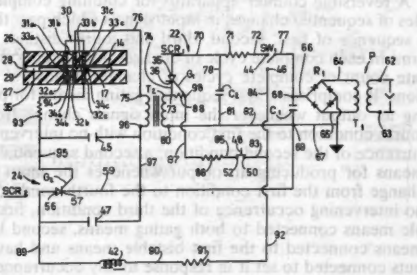


A punchcard read-feed mechanism having a plurality of opposing pairs of card feed rollers wherein only one roller of each pair is directly associated with a main power source through appropriate gearing while the other rollers of each pair are not associated with any gearing and are driven by the first-mentioned rollers of each pair, making it possible where desirable to mount all of the nongear driven rollers on a separate carrier which is separable from the structure supporting the gear-driven rollers whereby cleaning and clearing the mechanism is greatly facilitated. A card switch mechanism as part of the punchcard read-feed mechanism having an actuator arm disposed at the center of the card read mechanism whereby the card read switch is operated by any card passing through the read-feed mechanism regardless of its column width.

3,562,496
DATA-SENSING DEVICE

Charles R. Fisher, 5913 Renwood Drive, Parma, Ohio 44129

Filed Jan. 4, 1968, Ser. No. 695,624
Int. Cl. G06k 7/06
U.S. Cl. 235—61.11 24 Claims



A data-sensing device for sensing indicia on an indicia carrying member, such as an individual card or continuous tape. The device comprises at least one pair of oppositely disposed terminals which are electrically connected to a power source.

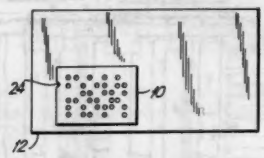
A signal control arrangement is provided for selectively transmitting electrical energy to the terminals from the power source causing a spark to pass through an aperture in the indicia member or through the material of the indicia member and to an indicating arrangement provided to indicate the presence of the spark.

3,562,497

POSTAL ADDRESS DEVICE

Francisco Lopes Gastal, Rua Goncalves Chaves 759, Pelotas, RGS, Brazil, and Raul Da Silva Vieitas, Rua Santa Lucia, 100, Rio De Janeiro, GB, Brazil

Filed Aug. 16, 1967, Ser. No. 661,090
Claims priority, application Brazil, Aug. 18, 1966, 182,209
Int. Cl. G06k *19/08*
U.S. Cl. 235—61.12 9 Claims



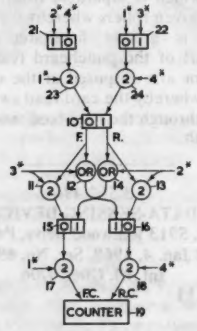
A rectangular metal foil or seal is used on envelopes, postcards and the like and is provided with coded arrangements of perforations indicating an address.

3,562,498

REVERSIBLE COUNTER APPARATUS

Peter James Darling, Biggin Hill, and Albert Norman John Uren, Bromley, England, assignors to National Research Development Corporation, London, England

Filed Jan. 8, 1968, Ser. No. 696,319
Claims priority, application England, Jan. 9, 1967, 1067/67
Int. Cl. G06m *3/14*; H03k *21/06*; G06n *1/272*
U.S. Cl. 235—92 5 Claims



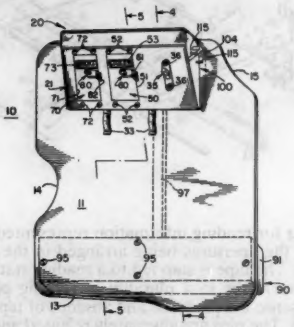
A reversible counter apparatus for counting complete cycles of sequential changes in input signals which pass through a sequence of first, second, third and fourth distinct conditions in each complete cycle of changes, for keeping an accurate count of complete cycles of changes in adverse conditions. It comprises a first sequential gating means for producing an output whenever the input signals change from the fourth condition to the first condition with no intervening occurrence of the second condition, a second sequential gating means for producing an output whenever the input signals change from the first condition to the fourth condition with no intervening occurrence of the third condition, first bistable means connected to both gating means, second bistable means connected to the first bistable means and having inputs connected to set it in response to any occurrence of the third condition while the first bistable means is set and to reset it on any occurrence of the third condition and also whenever said first bistable means is reset, third bistable means connected to the first bistable means and having inputs connected to set it on any occurrence of the second condition while the first bistable means is reset and to reset it on any occurrence of the third condition and also whenever the first bistable means is set, and a reversible counter connected to the second and third bistable means. The invention is applicable to laser range finders and distance-measuring apparatus using fringe-counting techniques. Visual indicators may be provided to allow incremental parts of cycles to be measured.

3,562,499

BATTERY OPERATED TIMING DEVICE

Carl S. Spetzler, Chicago, Ill. (240 S. Castanya Way, Mento Park, Calif. 94025), and Carl L. Dunbar, Des Plaines, Ill. (88 Petrie Circle, Streamwood, Ill. 60103)

Filed Feb. 8, 1968, Ser. No. 703,918
Int. Cl. G04c *23/50*
U.S. Cl. 235—92 11 Claims



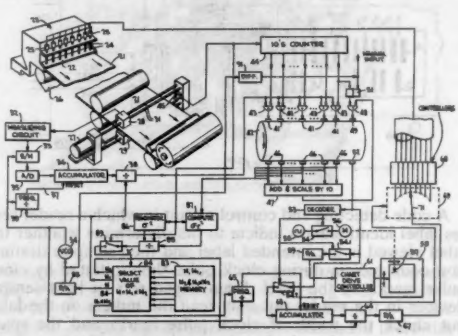
There is disclosed a portable writing board comprising a flat board having a size and shape to be conveniently supported upon a limb of the user and adapted to receive paper thereon for writing purposes, timing apparatus mounted on the board for producing a train of timing pulses at an output therefor, a first timing pulse counter mounted on the board and including an input and an indicator output, a second timing pulse counter mounted on the board and including an input and an indicator output, and switching apparatus mounted on the board for connecting the timing apparatus output alternately to the input of the first counter and the input of the second counter, the switching apparatus including a manual operator effective when operated by the user of the writing board to apply the train of timing pulses alternately to one or the other of the inputs whereby the counters are driven alternately by the timing apparatus.

3,562,500

COMPOSITE PROFILE APPARATUS AND METHOD

Michael P. Grant, Columbus, Ohio, assignor to Industrial Nucleonics Corporation, a corporation of Ohio

Filed Feb. 16, 1968, Ser. No. 706,144
Int. Cl. G01d *21/00*
U.S. Cl. 235—151.3 25 Claims



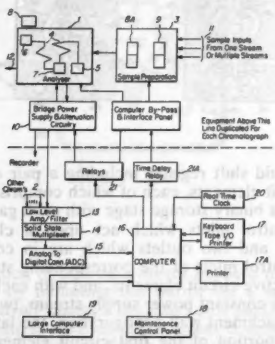
Disclosed are a system for and method of analyzing a property of a moving sheet in response to sampled data derived

from a plurality of scans of a transducer for the property across the sheet. A composite profile of the plural scans is obtained by averaging the property values for corresponding across the sheet points over several scans. To preserve computer memory, the average values of a plurality of samples within each scan are derived and then stored. The number of sampling points within each scan is determined either on an a priori basis or in response to the ratio over the several scans of the total variance of the process to a predetermined, desired variance of the average of the property determined from the sampled values within each scan. The number of sampling points comprising a single average is selected as an odd number.

3,562,501
COMPUTER CONTROL OF CHROMATOGRAPHS

Francis C. Mears, Canoga Park, Calif., assignor to Mobil Oil Corporation, a corporation of New York

Filed June 16, 1966, Ser. No. 558,048
Int. Cl. G06f *9/00*
U.S. Cl. 235—151.35 **16 Claims**

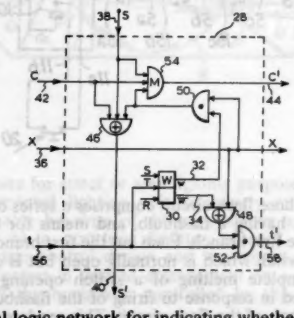


A digital computer system for controlling and monitoring chromatographic columns including detector means for providing analogue signals representative of the component peaks of the sample streams applied to each chromatographic column, and attenuating means for automatically attenuating the analogue signals in response to signals from the computer. Multiplexing means are provided for sequentially applying the analogue signals of the columns to an analogue to digital converter which, in turn, applies the digital signals to the digital computer. The system also includes means for generating a weighted slope to smooth out noise.

3,562,502
CELLULAR THRESHOLD ARRAY FOR PROVIDING OUTPUTS REPRESENTING A COMPLEX WEIGHTING FUNCTION OF INPUTS

William H. Kautz, Woodside, Calif., assignor to Stanford Research Institute, Menlo Park, Calif., a corporation of California

Filed Aug. 14, 1967, Ser. No. 660,271
Int. Cl. G06f *7/38*; G06k *9/06*
U.S. Cl. 235—152 **12 Claims**

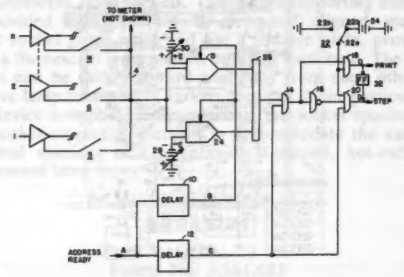


A digital logic network for indicating whether a number of inputs, after appropriate weighting, is more or less than a particular threshold. The network utilizes an array of identical cells, each connected only to the immediately adjacent cells, to provide a two-dimensional arrangement adapted for realization by integrated semiconductor technology.

3,562,503
CHECKING CIRCUIT FOR STABILIZED OPERATIONAL AMPLIFIERS

Earl G. Carson, Franklin Park, and Ben D. Conger, West Long Branch, N.J., assignors to Electronics Associates, Inc., Long Branch, N.J., a corporation of New Jersey

Filed Apr. 18, 1968, Ser. No. 722,355
Int. Cl. G06g *7/06*; G06f *11/00*
U.S. Cl. 235—153 **1 Claim**

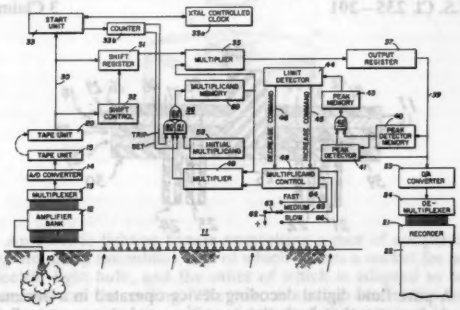


The specification discloses a circuit arrangement enabling automatic balance checking of operational amplifiers in an analogue computer by sequential connection of the stabilizer amplifier outputs to comparator means whose output, if any, controls an indicator and a stepping, or a stepping alone, to the next amplifier to be checked developing thereby a record or other indication of those amplifiers in need of rebalance.

3,562,504
DIGITAL AUTOMATIC GAIN CONTROL

Ralph A. Harris, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex., a corporation of Delaware

Filed Nov. 8, 1967, Ser. No. 681,352
Int. Cl. H03k *13/24*
U.S. Cl. 235—154 **10 Claims**

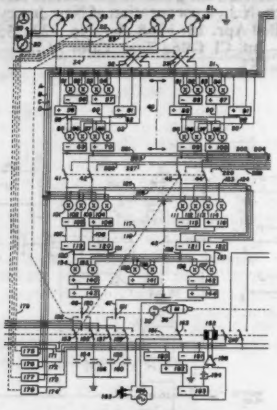


Digital representations of signals controlled as to amplitude in accordance with stepped gain changes are restored to the original level followed by digital automatic gain control and conversion to analogue form with gain changing at a controlled rate in direction dependent upon the difference between a given signal peak and an upper or a lower preset limit.

3,562,505
METHOD AND SYSTEM FOR GENERATING CONDITIONS REPRESENTATIVE OF REAL AND COMPLEX ZEROS

Carl A. Barlow, Jr., Dallas, and Eric L. Jones, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex., a corporation of Delaware

Filed Apr. 1, 1965, Ser. No. 444,554
Int. Cl. G06f 7/38; G06g 7/32
U.S. Cl. 235—156 21 Claims



Roots of a function f(z) of a single complex variable quantity z are determined by generating a first sequence of physical conditions, each member of the sequence representing approximations of a root quantity according to the recursive relation

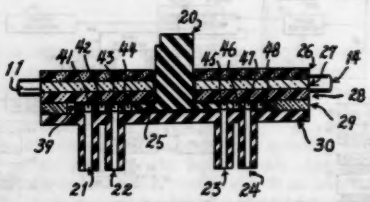
$$z_n = \frac{z_{n-2}f(z)_{n-1} - z_{n-1}f(z)_{n-2}}{f(z)_{n-1} - f(z)_{n-2}}$$

where n is an index of the conditions in each sequence. The first sequence is terminated at a first root quantity. Subsequent sequences of the conditions are generated with elimination in each of the subsequent sequence of the effect of all earlier generated root quantities.

3,562,506
FLUIDIC DECIMAL DECODING DEVICE

Martin Chang, Pointe Claire, Quebec, Canada (485 Allan St. Hawkesbury, Ontario, Canada)

Filed Sept. 9, 1968, Ser. No. 758,435
Int. Cl. G06c 11/00
U.S. Cl. 235—201 3 Claims



A pure fluid digital decoding device operated in a decimal code basis so that both the operation and the construction cost of pure fluidic systems can be greatly simplified is shown.

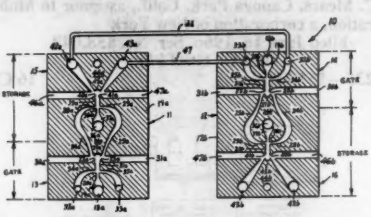
The present invention employs an array of four binary converter stages in a series in combination with a two-leg NOR/OR gate to constitute a decimally recurrent fluid circuit. It further employs a specially designed fluid switch of which the signal outputs from the array of converter stages will be screened before they enter a four-leg NOR-gate. The fluid switch can be preset at any of a set of 10 numbers from zero to nine to allow the four-leg NOR-gate to produce an output stream upon the converter stages obtaining a predetermined count.

A fluid switch in a decimal code system applicable as a fluid element in a decoding mechanism, and an integrated fluid circuit panel comprising the fluid switch is also illustrated.

3,562,507
PURE FLUID SHIFT REGISTER

Robert Arvid Kantola, Scotia, N.Y., assignor to General Electric Company, a corporation of New York

Filed Nov. 27, 1968, Ser. No. 779,423
Int. Cl. G06d 1/08
U.S. Cl. 235—201 9 Claims

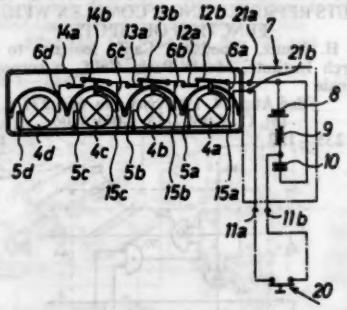


A pure fluid shift register including a pair of series connected circuit elements, each of which comprises an amplifier gate and a binary storage stage with each gate having two opposed control inlets which act upon a clocked power stream inlet and two outlets which are in communication with the control inlets of the corresponding storage portion of the respective circuit elements, and with each storage portion having a constant power supply stream, two outlets, and the usual attachment wall configuration, the latter outlets of the storage portion of the first circuit element being connected to the gate portion inputs of the second circuit element of the shift register.

3,562,508
FLASH UNIT

Franz Hoffacker, Langenfeld, Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

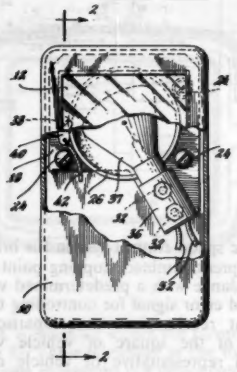
Filed Feb. 6, 1967, Ser. No. 614,092
Claims priority, application Germany, Feb. 18, 1966, P 14 97 388.7
Int. Cl. F21k 5/02
U.S. Cl. 240—1.3 6 Claims



Flash unit whose flash circuit comprises a series of parallel branches each having a flashbulb, and means for firing the flashbulb of the first branch. Each but the first branch further comprises a switch which is normally open but is closed on partial or complete melting of a switch opening member which is heated in response to firing of the flashbulb in the preceding branch of the flash circuit. This renders the flash-

bulb of the second branch ready for firing on renewed actuation of the firing means.

3,562,509
ANTIDEPOSITION CIRCUIT
William G. Kahl, Jr., Brookfield, Conn., assignor to Arrowhead Enterprises, Inc., Bethel, Conn., a corporation of Connecticut
Filed July 8, 1968, Ser. No. 743,067
Int. Cl. G02b ; F21v *33/00*
U.S. Cl. 240—4.2 6 Claims

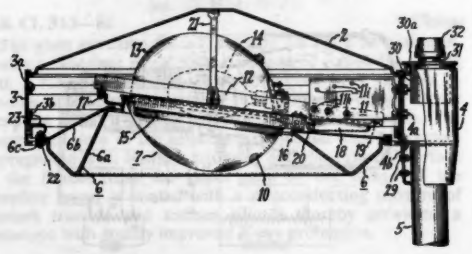


The deposition of dust on a mirror exposed to ambient air is prevented by mounting the mirror on a metallic plate which is positively charged. As more dust particles are positive than negative, such an arrangement is very effective in preventing the deposition of dust on the mirror surface.

ERRATUM

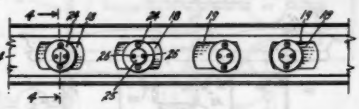
For Class 240—25 see:
Patent No. 3,561,682

3,562,510
LUMINAIRE
Samuel L. Baldwin, Flat Rock, N.C., assignor to General Electric Company, a corporation of New York
Filed June 20, 1968, Ser. No. 738,508
Int. Cl. F21s *1/10*
U.S. Cl. 240—25 13 Claims



Luminaire for street or area lighting purposes comprises a basic functional lighting unit selectively enclosed by interchangeable housings of different shapes and secured at one side to a post-top slipfitter adapted to contain a photoelectric control device and to support a plurality of such luminaires in desired arrangement on a common support, with the luminaires controlled by the same control device.

3,562,511
ADJUSTABLE SOCKET MOUNTINGS FOR FLUORESCENT LIGHTING FIXTURES
Melbourne C. Reeves, Denver, Colo., assignor to Sechrist Corporation, Denver, Colo., a corporation of Delaware
Filed Sept. 30, 1968, Ser. No. 763,822
Int. Cl. H05b *33/02*
U.S. Cl. 240—51.12 3 Claims



An elongated socket-supporting element, for assembly in a fluorescent lighting fixture, to adjustably support a plurality of fluorescent lamp sockets. The socket-supporting element is provided with a plurality of elongated, aligned, spaced-apart socket guide holes and has a slidable plate, provided with a fluorescent lamp socket, covering each hole. The slide plates can be shifted toward and away from each other to receive lamp terminals of various spacings. More particularly the device is applicable for adjusting the socket spacings in the socket-supporting element to accommodate the various terminal spacings of conventional U-shaped, hot-cathode fluorescent lamp tubes.

ERRATUM

For Class 240—53 see:
Patent No. 3,561,683

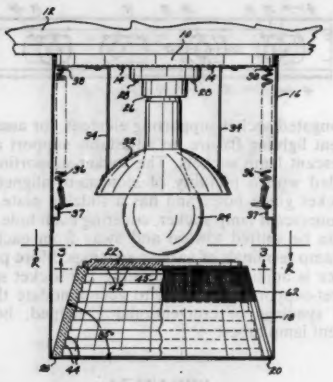
3,562,512
ELECTRIC LIGHTING FIXTURE FOR CEILING MOUNTED LIGHTS
Hiroshi Oshima; Yasutaka Morishita, and Isao Kuribayashi, Kadoma, Osaka, Japan, assignors to Matsushita Electric Works, Ltd, Osaka, Japan, a corporation of Japan
Filed Mar. 29, 1968, Ser. No. 717,352
Claims priority, application Japan,
Int. Cl. F21s *1/06*
U.S. Cl. 240—78 2 Claims

An electric lighting fixture comprising a pair of cooperating mounting assemblies, one of which carries a socket for an electric light bulb, and the other of which is adapted to be mounted on the ceiling. The two mounting assemblies include two cooperating pairs of terminal elements, each of which has a lateral projection thereon so that when the two mounting assemblies are fitted together and turned slightly, the lateral projections on the terminal elements overlap each other so as to both mechanically and electrically connect the two mounting assemblies. The lower mounting assembly also includes a peripheral flange which supports the inner edge of a lamp shade adapted to fit down over the lower mounting assembly.

3,562,513
LIGHTING FIXTURE WITH PRISMATIC REFLECTOR

Joseph L. Jaffe, Shaker Heights, Ohio, assignor to Perfeclite, Inc., Cleveland, Ohio, a corporation of Ohio. by mesne assignments

Filed June 7, 1968, Ser. No. 735,385
Int. Cl. F21v 5/02, 7/00, 13/00
U.S. Cl. 240—78 11 Claims

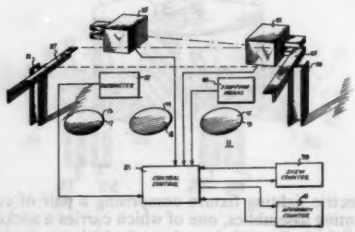


An overhead lighting fixture including a planar base member with a hollow open ended housing secured at one end to the underside of the base member and extending downwardly therefrom. A light source in the form of a pendant incandescent lamp is secured to the underside of the base member and extends downwardly therefrom interiorly of the housing. A hollow, peripheral reflector is disposed interiorly of the housing and is secured to the lower portion of the housing below the light source. A lens is disposed between the light source and the reflector, the lens reflector having prisms formed therein to direct light from the light source downwardly and outwardly through the lens to the reflector and thence downwardly and outwardly in an opposite direction at a substantial angle to the vertical to illuminate a large horizontal area below the fixture.

3,562,514
COKE OVEN CHARGING CAR LOCATING CONTROL

Walter A. Brand, Jr., Roanoke, Va., assignor to General Electric Company, a corporation of New York

Filed Mar. 5, 1969, Ser. No. 804,601
Int. Cl. B60l 3/00
U.S. Cl. 246—167 4 Claims

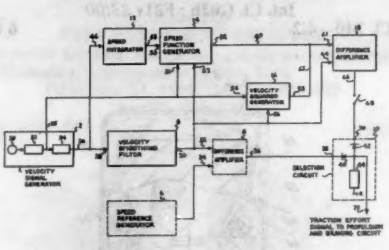


Apparatus for compensating the misalignment of a car for charging coal into a coke oven, wherein a central control roughly positions the car in response to pulses from a digital tachometer located on the car. Fine positioning of the car is performed by utilizing the stored pulses of a skew counter and an approach counter under control of signals produced by limit switches carried by the car and actuated by positioning elements on the oven.

3,562,515
TAPERED BRAKING RATE FOR TRACTION VEHICLES

Lloyd R. Oster, Erie, Pa., assignor to General Electric Company, a corporation of New York

Filed May 14, 1969, Ser. No. 824,490
Int. Cl. B61l 3/08
U.S. Cl. 246—182 13 Claims

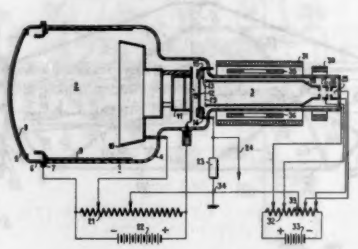


An automatic speed control system for bringing a vehicle to a stop at a predetermined stopping point on its route of travel in accordance with a predetermined velocity-distance profile. A speed error signal for controlling the vehicle traction equipment results from a comparison of a signal representative of the square of vehicle velocity with a distance signal representative of vehicle distance to the stopping point. This distance signal is modified by subtracting therefrom a product signal which is a function of the product of the vehicle velocity and of the distance of the vehicle from the stopping point to provide for reduction of the vehicle velocity at a deceleration rate increasing linearly as an inverse function of velocity. When the vehicle attains a predetermined maximum deceleration rate, the product signal may be removed and the relative weighting of the compared velocity squared and target distance signals may be modified to permit continued vehicle deceleration at the maximum deceleration rate.

3,562,516
IMAGE PICKUP TUBE WITH SCREEN AND FIELD GRIDS

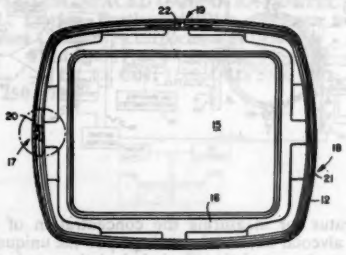
Lucien Francis Guyot, Paris, France, assignor to Compagnie Francaise Thomson-Hotchkiss Brandt, Paris, France, a corporation of France

Filed Sept. 13, 1968, Ser. No. 759,669
Claims priority, application France, Sept. 28, 1967, 122625
Int. Cl. H01j 31/28, 31/38
U.S. Cl. 313—65 1 Claim



The acceleration and focusing means located between a photocathode and a secondary emission induced conductivity target include a grid located and electrically energized to reduce the speed of electrons impinging on the target to a value providing for optimum secondary emission from the target, thus assuring low electron transit times and high resolution.

3,562,517
SHADOW MASK MOUNTING SYSTEM FOR COLOR KINESCOPE INCLUDING ONE SIDE DIRECT CONNECTION
Irving Weinberg and Laszlo Javorik, Chicago, and Eugene V. Heitlinger, Franklin Park, Ill., assignors to National Video Corporation, Chicago, Ill., a corporation of Illinois
Filed Oct. 3, 1967, Ser. No. 672,474
Int. Cl. H01j *1/96*; H01x *29/06*
U.S. Cl. 313—85 4 Claims



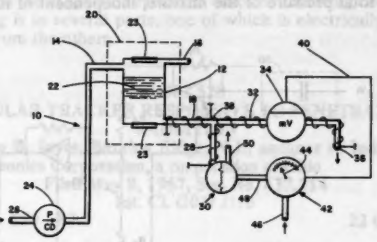
A shadow mask is mounted within the faceplate panel of a cathode ray tube for color television at the top and at each side. One of the side mountings is a direct connection which is nonresilient in a horizontal direction and formed by a bracket fixed to the shadow mask frame and defining a socket for interlocking with the side mounting stud. In one embodiment, this direct connection prevents a lateral motion of the shadow mask frame relative to the faceplate panel while permitting removal of the shadow mask by movement axially of the frame. The top and other side connections are resilient connections, and they are designed to permit a predetermined hinging motion of the shadow mask as it heats up for rotating the mask about the direct connection toward the viewing area thereby correcting for misregistration of the shadow mask apertures with their associated phosphor dot pattern as the shadow mask expands. In one embodiment, the mounting system both rotates and translates the mask toward the screen for correcting for misregistration.

3,562,518
COLOR KINESCOPE WITH IMPROVED X-RAY PROTECTION
Laszlo Javorik, Chicago, and George A. Rokos, Westchester, Ill., assignors to National Video Corporation, Chicago, Ill., a corporation of Illinois
Filed Nov. 21, 1967, Ser. No. 684,677
Int. Cl. H01j *31/20*
U.S. Cl. 313—85 9 Claims

The glass envelope for a kinescope for color television includes a faceplate panel with a peripheral flange for sealing with a funnel which defines a constricted neck portion. A shadow mask mounted within the peripheral flange of the faceplate panel is coated with a thin layer of bismuth. The constricted neck of the tube is encompassed with paper pulp impregnated with bismuth trioxide; and the external surface of the funnel from the paper pulp to the flange of the faceplate panel is coated with a nonconducting mixture of bismuth trioxide and sodium silicate thereby providing a kinescope with greatly improved X-ray protection.

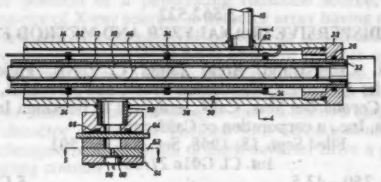
3,562,519
CONSTANT MASS SAMPLE CELL
Myron N. Palmer, Gibsonia, and Thomas J. Puzniak, Cheswick, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa., a corporation of Delaware
Filed Oct. 21, 1968, Ser. No. 769,295
Int. Cl. G01n *21/26*
U.S. Cl. 250—43 15 Claims

Means providing a sample cell for use in other analyzers requiring a constant mass of liquid sample. The invention utilizes the principle that weight is proportional to mass, and



adjusts the height of the liquid in the constant-cross-section cell inversely in response to density changes.

3,562,520
FAIL-SAFE WATER PURIFYING APPARATUS
Ralph W. Hippen, Houston, Tex., assignor to Puretest Water Purifying Company, Houston, Tex., a corporation of Texas
Filed Nov. 4, 1968, Ser. No. 773,011
Int. Cl. G01h *21/26*
U.S. Cl. 250—43 2 Claims



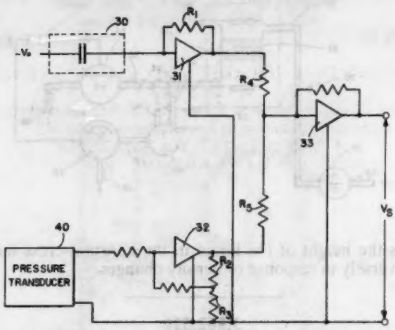
Apparatus for the purification of liquid, such as water, by exposing the same to ultraviolet lamp, embodying means forming an annular passageway through which water may flow in surrounding relation to an electric lamp of a type producing ultraviolet light and ultraviolet light-responsive means for shutting off the flow of water therethrough in response to a decrease in the intensity of the ultraviolet light passing through the water when such intensity falls below a predetermined value. The apparatus includes a protective tube of quartz glass surrounding the ultraviolet lamp and wiper means movable in response to the turning off and on of the flow of water through the apparatus to wipe the external surface of the quartz tube.

Means is also provided for preventing the formation of clouded areas on the glass of the lamp due to the positioning of the wiper means at one location surrounding the lamp during long periods of nonoperation of the wiper means while the lamp is on. Means is provided for preventing the wiper means from interferring with the flow of ultraviolet light flowing to the light responsive means by which the flow of water is cut off.

3,562,521
INSTRUMENT FOR MEASUREMENT OF PARTIAL PRESSURE OF COMPONENTS IN A FLUID MIXTURE
George Frederick Vanderschmidt, Jamica Plain, and James Scott Riley, Peabody, Mass., assignors to Lion Precision Corporation, a corporation of Pennsylvania
Filed Jan. 30, 1968, Ser. No. 701,741
Int. Cl. G01n *21/26*, *23/12*; H01j *37/00*
U.S. Cl. 250—43.5 7 Claims

A system providing an output signal linearly related to the amount of one selected component present in a mixture of fluids having at least two components. The system includes at least two detectors, one producing an output signal which may be expressed as the sum of two terms where the first term varies in linear proportion to variations in the partial pressure of the selected component and the second term va-

ries in proportion to the variations in the total pressure of the fluid independent of its composition. The second detector produces an output which varies in proportion to variations in the total pressure of the mixture, independent of its composition. The two signals are then combined to produce an output signal which varies linearly with the amount of the selected component, independent of variations in the total pressure of the mixture.

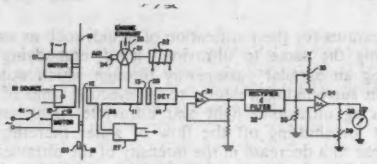


3,562,522

NONDISPERSIVE IR ANALYZER AND METHOD FOR CALIBRATING

Carl N. Cederstrand, Brea; James C. Davis, Fullerton; Charles A. Keenan, Huntington Beach, and Jerrold H. Randall, Corona Del Mar, Calif., assignors to Beckman Instruments, Inc., a corporation of California

Filed Sept. 18, 1968, Ser. No. 760,501
Int. Cl. G01n *21/26*
U.S. Cl. 250—43.5 **5 Claims**



A nondispersive infrared analyzer having a source, flow cell, filter and detector is disclosed. The inlet to the flow cell may be switched from one of two intakes and the outlet is connected to a jet pump. With air flowing through the cell the zero suppression control is adjusted to reduce the signal input to the DC amplifier to zero. The calibration blade is started and the span control adjusted to provide a given upscale reading of the meter. The analyzer is then calibrated to provide a reading directly in concentration of the desired constituent.

3,562,523

METHOD FOR DETERMINING RESIDUAL OIL CONTENT OF A FORMATION USING THERMAL NEUTRON DECAY MEASUREMENTS

Jasper E. Richardson, Houston, Tex., and Richard E. Wyman, New Orleans, La., assignors to Shell Oil Company, New York, N.Y., a corporation of Delaware

Filed Apr. 26, 1967, Ser. No. 633,963
Int. Cl. G01v *5/00*
U.S. Cl. 250—43.5 **4 Claims**

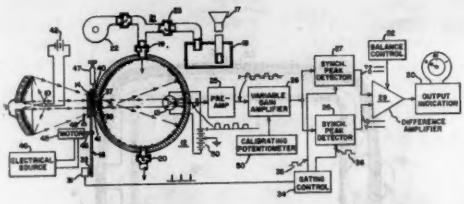
A method for determining residual oil in a formation that has been reduced to residual oil by water drive or waterflooding. The method measures the thermal neutron decay first with the formation water and then with water having a materially different capture cross section substituted for the formation water at least within the radius of investigation of the logging tool.

3,562,524

APPARATUS FOR MEASURING THE CONCENTRATION OF ALCOHOL VAPOR IN ALVEOLAR AIR

Donald F. Moore, and Walter S. Beeman, Liverpool, N.Y., assignors to General Electric Company, a corporation of New York

Filed Dec. 11, 1968, Ser. No. 782,964
Int. Cl. G01n *21/26*
U.S. Cl. 250—43.5 **13 Claims**



Apparatus for measuring the concentration of ethyl alcohol in alveolar air, and depending upon the unique infrared absorption characteristics of ethyl alcohol vapor is disclosed. Infrared radiation of two spectral selections—one strongly absorbed and the other relatively unabsorbed—is introduced in sequence into an absorption chamber containing alcohol vapor. The sequenced illumination is balanced in an electrical comparator in the absence of alcohol and imbalance is used to measure the concentration of alcohol vapor within the chamber.

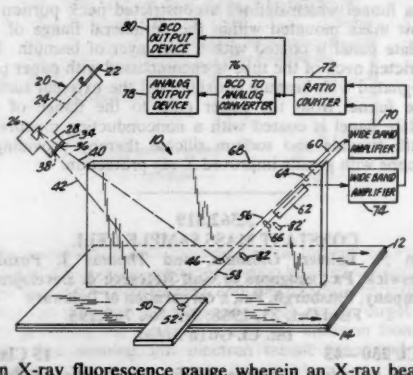
The absorption chamber forms a light-integrating sphere to multiply the infrared absorption path length and to provide a uniform level of interior illumination. The single source of illumination of the chamber is focused into two separated beams by means of a split ellipsoidal mirror into which separate relatively small and simple filters may be introduced. The optical paths through the chamber to the simple detector are balanced by the integrating effect of the sphere. Filters employing vinylidene chloride-vinyl chloride copolymer, crystalline calcium fluoride and polytrifluoromonochloroethylene are treated. Simple self-calibration means are provided. The apparatus is applicable to law enforcement problems.

3,562,525

X-RAY FLUORESCENCE GAUGING EMPLOYING A SINGLE X-RAY SOURCE AND A REFERENCE SAMPLE FOR COMPARATIVE MEASUREMENTS

Nikiforos Constantine, St. Paul, and Larry L. Hobbs, Maplewood, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn., a corporation of Delaware

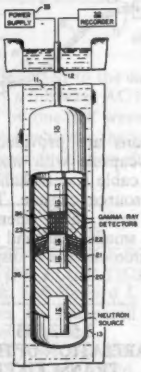
Filed June 29, 1967, Ser. No. 649,911
Int. Cl. G01t *1/16*
U.S. Cl. 250—51.5 **5 Claims**



An X-ray fluorescence gauge wherein an X-ray beam is separated into two beams for concurrently irradiating a coat-

ing and base and a reference sample each of which contain elements capable of producing fluorescent characteristic radiation when irradiated by one of the X-ray beams is shown A pair of detectors receive the characteristic fluorescent radiation, with at least the characteristic radiation from the coating and base element passing through a filter, and the outputs from the detectors are applied to a ratio counter which includes means for indicating the ratio of radiation counts.

3,562,526
NEUTRON-GAMMA RAY WELL LOGGING APPARATUS EMPLOYING SPACED GAMMA RAY DETECTORS
Bobby L. Lawson, Bartlesville, Okla., assignor to Phillips Petroleum Company, a corporation of Delaware
Filed Oct. 17, 1967, Ser. No. 675,915
Int. Cl. G01t *1/20*; G01v *5/00*
U.S. Cl. 250—71.5 **8 Claims**

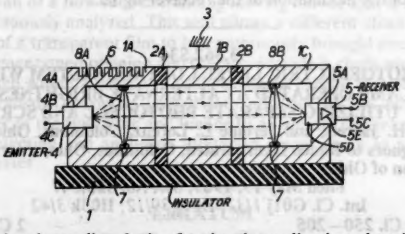


A neutron-gamma ray well-logging device comprises a neutron source and two spaced gamma ray detectors. The detectors are shielded so that only gamma rays which emerge from the formations at a predetermined angle are allowed to strike the first detector. Only gamma rays which are emitted from the first detector at a predetermined angle are allowed to strike the second detector.

ERRATUM

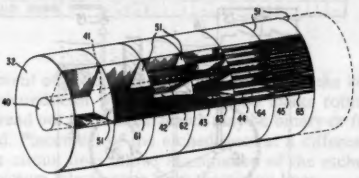
For Class 250—83 see:
Patent No. 3,562,480

3,562,527
INSULATED SIGNAL COUPLER
Jean Claude Adam Chaimowicz, Greenford, England, assignor to Mining & Chemical Products Ltd., Middlesex, England, a British company
Filed July 17, 1968, Ser. No. 745,496
Claims priority, application Great Britain, July 17, 1967, 32,824
Int. Cl. G01t *1/00*
U.S. Cl. 250—83 **5 Claims**



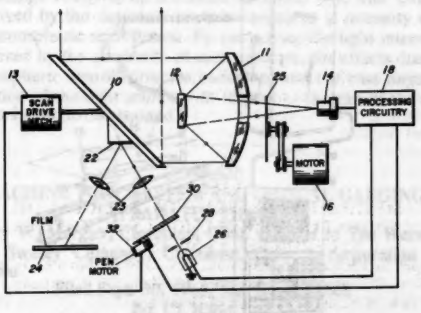
A signal-coupling device for signal coupling but electrically insulating two parts of an electronic circuit. The device has a gallium arsenide diode and a photoelectric receiving cell both in a housing in which is also a lens system which collimates the radiation from the gallium arsenide diode and focusses the collimated radiation onto the receiving cell. The housing is in several parts, one of which is electrically insulated from the others.

3,562,528
ANGULAR TRACKER RESPONSIVE TO PENETRATING RADIATION
William B. Joyce, Basking Ridge, N.J., assignor to Industrial Nucleonics Corporation, a corporation of Ohio
Filed May 9, 1967, Ser. No. 637,214
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 **22 Claims**



Disclosed is a system for deriving a direct digital indication of the position of a penetrating radiation source, e.g., a gamma-ray of X-ray source. A detector array having multiple channels with the same field of view is irradiated by the source. Each channel includes a different number of radiation-receiving areas to derive the digital indication. The detector array, in certain embodiments, is shielded with a slit plate or shadow mask. In another embodiment, a single multiple detector channel is shielded with a shadow mask and step changes in illumination of each detector drive a position indicating counter.

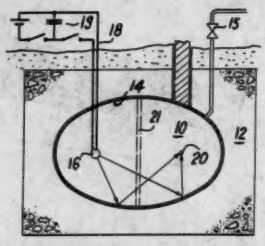
3,562,529
INFRARED THERMOGRAPH PRODUCING COLOR IMAGES BY SELECTIVE INSERTION OF COLOR FILTERS BETWEEN A SCANNING LIGHT SOURCE AND A LIGHT SENSITIVE SURFACE
Nelson E. Engborg, Greenwich; Robert Bowling Barnes, Stamford, and Maggio Charles Banca, Greenwich, Conn., assignors to Barnes Engineering Company, Stamford, Conn., a corporation of Delaware
Filed July 3, 1968, Ser. No. 742,224
Int. Cl. H01j *39/00*
U.S. Cl. 250—83.3 **10 Claims**



An infrared thermograph is provided which synchronously scans an infrared detector over a field of view and a constant brightness light over a light sensitive surface. The constant brightness light source is modulated by a filter means in accordance with signals developed by the infrared detector to produce a thermal image of the field of view of the thermograph on the light sensitive surface. A number of different

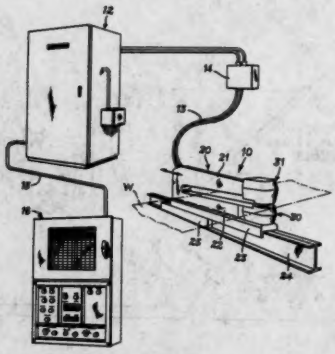
visual displays, including color, are provided depending on the type of filters used.

3,562,530
METHOD AND APPARATUS OF PRODUCTION OF NONCONTAMINATED PLASMOIDS
Terenzio Consoli, LaCelle Saint Cloud, and Lucien Slama, Massy, France, assignors to Commissariat A L'Energie Atomique, Paris, France
Filed Jan. 22, 1968, Ser. No. 699,584
Claims priority, application France, Feb. 2, 1967, 93498
Int. Cl. G21g *3/00*
U.S. Cl. 250—84.5 **17 Claims**



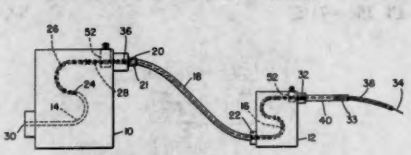
A method for producing and/or heating a plasmoid, consisting in disposing a target at a first conjugate focal point of a closed chamber which constitutes a mirror system and in producing at least at a second focal point which is conjugate with said first focal point a substantial release of electromagnetic energy in the form of a pulse of very short duration, said energy being focused on said target which is thus heated to a high temperature.

3,562,531
NUCLEONIC MEASURING APPARATUS WITH AUTOMATIC FIRE SAFETY RADIATION SOURCE SHUTTER CLOSING AND LOCKING MEANS COMPRISING A SPRING RETAINED BY A FUSIBLE BARRIER WHICH MELTS AT HIGH TEMPERATURES
George J. Trachevski, Dublin, and Ernest A. Auborn, Hilliard, Ohio, assignors to Industrial Nucleonics Corporation, a corporation of Ohio
Filed Apr. 27, 1967, Ser. No. 634,363
Int. Cl. G01t *1/17*
U.S. Cl. 250—106 **7 Claims**



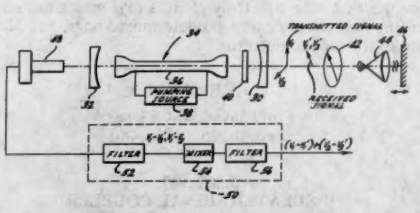
A nucleonic measuring instrument wherein a housing contains a radiation source and has an aperture controlled by a shutter which is spring loaded to a closed position for confining and shielding the radiation and is movable by a motor to an open position for releasing the radiation, the motor being supplied with power through a heat-sensitive element so that it is deenergized and the shutter closes in response to a predetermined high ambient temperature such as may be caused by a fire, and a spring steel shutter lock is retained in a retracted position by a barrier of meltable metal which is adapted to melt and release the spring lock at a still higher ambient temperature for locking the shutter in its closed position.

3,562,532
METHOD AND MEANS FOR CHANGING RADIOACTIVE SOURCES
Michael P. Santoro, Newtown Square, and Stephen Boyko, Phoenixville, Pa., assignors to Automation Industries, Inc., a corporation of California. by mesne assignments
Filed Oct. 26, 1967, Ser. No. 678,269
Int. Cl. G21f *5/00*
U.S. Cl. 250—106 **1 Claim**



Method and means are provided to permit use of a radioactive source capsule with storage units of different sizes. An extension cable is detachably connected to a main cable holding the source capsule. The extension cable is detached from the main cable when the source capsule is disposed within the smaller unit and is attached to the main cable when the source capsule is disposed within the larger unit.

3,562,533
VARIABLE POLARIZATION OPTICAL HETERODYNE TRANSCEIVER
Walter M. Doyle, Laguna Beach, and Wesley Duane Gerber, Santa Ana, Calif., assignors to Philco-Ford Corporation, Philadelphia, Pa., a corporation of Delaware
Filed May 23, 1968, Ser. No. 731,376
Int. Cl. H04b *9/00*
U.S. Cl. 250—199 **8 Claims**

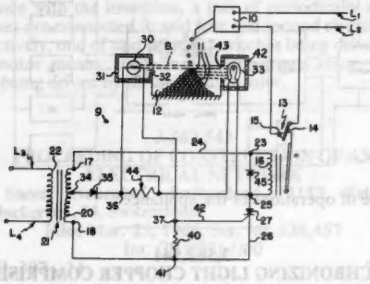


A laser system that utilizes a single laser as a transmitter, a local oscillator and a preamplifier. The polarizations of the normal laser oscillations and the polarization of the received signal are made different so that the received signal in passing through the laser alters the polarization of the laser output signal. Means are provided for converting the polarization modulation into an electrical signal representative of the modulation of the receiver signal.

3,562,534
PHOTOELECTRIC LEVEL CONTROL SYSTEM WITH LAMP OPERATED AT ALTERNATE BRIGHTNESS UTILIZING SEPARATE PHOTOCELL AND SCR
Jay H. Jarrett, and Jerome L. Lorenz, Columbus, Ohio, assignors to Ranco Incorporated, Columbus, Ohio, a corporation of Ohio
Filed May 19, 1969, Ser. No. 825,847
Int. Cl. G01j *1/32*; **H01j** *39/12*; **H03k** *3/42*
U.S. Cl. 250—205 **2 Claims**

An electric lamp projects a light beam on a level at which a body of material is to be maintained and onto a light sensi-

tive resistance element. When the beam is unobstructed the element triggers an SCR which conducts and initiates depositing of material until the material obstructs the beam whereby the element deactivates the SCR to terminate depositing of material. The lamp is energized by a center tap



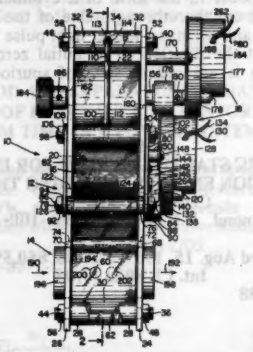
transformer winding connected to the lamp filament so that the lamp is energized by a full wave AC rectified to DC when the SCR conducts and by one-half wave AC rectified when the SCR is nonconducting whereby the lamp intensity is high during depositing of material and low during the period the light is obstructed by material.

3,562,535

RADIATION SENSITIVE DEVICE FOR FLOW TUBE USING MOVING FLUID TIGHT SEAL

Alton Leger, Jr., Roslyn, and Howard I. Oshry, Huntingdon Valley, Pa., assignors to Honeywell Inc., Minneapolis, Minn., a corporation of Delaware

Filed Feb. 14, 1969, Ser. No. 799,339
Int. Cl. G01n *21/26*
U.S. Cl. 250—218 **8 Claims**



A transparent film under tension is employed to provide a moving fluid tight seal over and about an opening formed in the wall of a flow tube containing moving matter that is to be continuously analyzed. This seal allows a different clean portion of a transparent film to be continuously brought over the aforementioned opening and thereby provide a clean window through which a source of radiant energy can be directed as this radiant energy is passed into and out of the moving matter in the flow tube and thence to an optical radiant energy detecting and analyzing utilitarian means, such as a turbidimeter.

ERRATUM

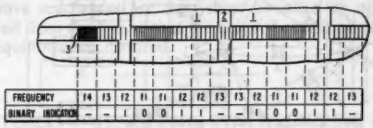
For Class 250—219 see:
Patent No. 3,561,846

3,562,536

RADIATION SENSITIVE SEMICONDUCTOR WAFER IDENTIFICATION SYSTEM

Rolf H. Brunner, and Ollie C. Woodard, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y., a corporation of New York

Filed Aug. 30, 1968, Ser. No. 756,540
Int. Cl. G08c *9/06*
U.S. Cl. 250—219 **8 Claims**



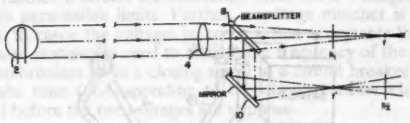
Placement of coded indicia as etched lines in the kerf area of a semiconductor wafer. Scanning and image rotation are used to read out the indicia, which may be binary or frequency coded. Placement of the etched lines at a different angle from the circuit lines allows illumination of the etched lines with minimum interference from the circuit lines.

3,562,537

ELECTRO-OPTICAL DECORRELATION OF WAVEFRONT DISTORTION DUE TO ATMOSPHERIC SCINTILLATION

Walter E. Miller, Jr., Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army

Filed Sept. 3, 1969, Ser. No. 854,845
Int. Cl. H01j *3/14, 39/12*
U.S. Cl. 250—220 **5 Claims**



A device for determining the angular position of a light source wherein light from the source is received by a lens, split into two paths, and detected by quadrant detectors placed before the focal point of the first path and after the focal point of the second path. The out-of-focus image (blur circle) received by one detector is inverted with respect to the image received by the other detector. The blur circles received by the detectors contain variations in intensity due to atmospheric scintillation. By comparing the light intensity received by the quadrants of each detector, the effects due to atmospheric scintillation are canceled, and the true angular position of the light source with respect to the axis of the detectors may be determined.

3,562,538

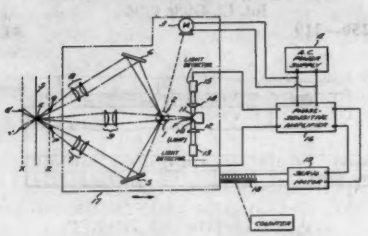
MACHINE TOOL SYSTEM AND OPTICAL GAUGING APPARATUS THEREIN

Harry W. Mergler, Cleveland, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio, a corporation of Ohio

Filed Sept. 30, 1968, Ser. No. 763,848
Int. Cl. B26d *5/34*
U.S. Cl. 250—222 **13 Claims**

In this system an optical gauging apparatus produces two time-displaced light beams which are directed at opposite acute angles to a nonspecular reflecting surface on the workpiece and are focused on the same point. A lens system focused on this same point receives diffuse reflections from the workpiece surface and focuses these reflections at the knife edge intersection of two oppositely-inclined reflecting

surfaces. A pair of detectors are positioned to receive the respective reflections from these reflecting surfaces and to operate a phase-sensitive amplifier. The amplifier output signal operates a servomotor to adjust the position of the optical gauging apparatus so as to position the focus of its two light beams on the workpiece surface and also produces a signal for causing another servomotor to adjust the position of a cutting tool with respect to the workpiece.

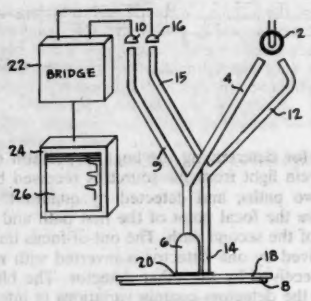


3,562,539

APPARATUS FOR SCANNING THIN-LAYER AND OTHER CHROMATOGRAMS

Morton Beroza, Silver Spring, and Kenneth R. Hill, Severna Park, Md., assignors to the United States of America as represented by the Secretary of Agriculture

Filed Aug. 28, 1968, Ser. No. 755,891
Int. Cl. G02b *5/14, 5/16*
U.S. Cl. 250—227 **5 Claims**



An apparatus for scanning thin-layer and other chromatograms containing a fiber optic scanning head consisting of randomly mixed glass fibers, half of which conducts light to a small defined area of the chromatogram and half of which conducts the reflected light to a photo-sensing cell for recording of its response on a strip chart recorder. A second fiber optic head scans the blank area adjacent to the spots to correct for background differences on the plate or other chromatogram supporting means.

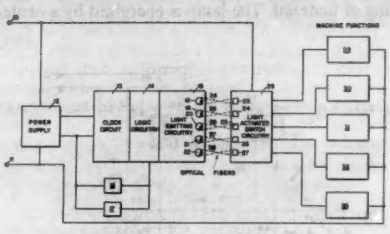
3,562,540

APPLIANCE WITH SOLID-STATE LIGHT-ACTUATED CONTROL MEANS

James Arthur Hirsch, Indianapolis, Ind., assignor to P.R. Mallory & Co., Inc., Indianapolis, Ind., a corporation of Delaware

Continuation of application Ser. No. 530,713, Feb. 28, 1966. This application Apr. 10, 1969, Ser. No. 816,178
Int. Cl. H01j *5/16;* **H03k** *19/52*
U.S. Cl. 250—227 **5 Claims**

A light-actuated solid-state control means for an appliance employing solid-state switching devices for programming the sequence of operations of the appliance.

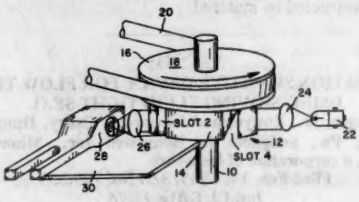


3,562,541

SYNCHRONIZING LIGHT CHOPPER COMPRISING CYLINDRICAL DISC WITH PLURALITY OF CHANNELS

Karl F. Schroeder, Berwyn Heights, Md., assignor to Neotec Corporation, a corporation of Delaware

Filed June 28, 1968, Ser. No. 740,899
Int. Cl. G01d *5/36;* **H04n** *3/02*
U.S. Cl. 250—233 **4 Claims**



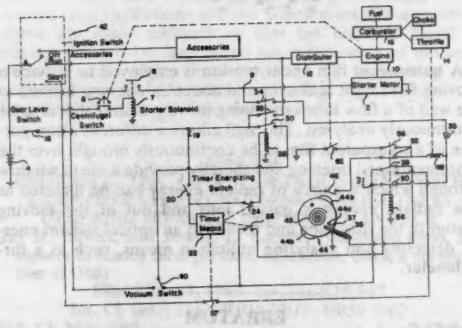
A synchronizing light chopper which is rotatable and has a mechanical member in the form of a cylinder with a multiplicity of slots cut therethrough. One of the slots is wider than the others and permits a longer light pulse therein which is used to reset the flip-flop to its initial zero state. Thus, synchronization is ensured in spite of spurious, unwanted trigger pulses.

3,562,542

AUTOMATIC STARTING SYSTEM FOR INTERNAL COMBUSTION ENGINES INCLUDING THROTTLE CONTROL MEANS

Frank A. Redmond, R.F.D. 4 Overlook Hills, Wintersville, Ohio 43952

Filed Aug. 15, 1969, Ser. No. 850,592
Int. Cl. F02n *11/08*
U.S. Cl. 290—38 **14 Claims**



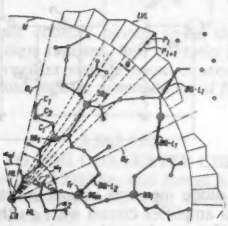
An automatic system for starting an internal combustion engine, characterized by the provision of normally deener-

gized solenoid means operable to actuate the throttle means to prime the engine, first circuit means operable to energize the solenoid means to prime the engine prior to the starting thereof, second circuit means operable to energize both the starter motor and the solenoid to prime the engine during starting, and timer means for alternatively activating said first and second circuit means in succession, respectively. In accordance with the invention, a pair of periodically operable switches are connected in said first and second circuit means, respectively, one of said periodic switches being driven by rotary motor means, such as a spring driven rotor, and the other being driven by the distributor rotor.

3,562,543
PROCEEDING OF CONSTRUCTION OF AN ELECTRICAL NETWORK

Joze Sacer, Neuenhof, Switzerland (4153 Reinach/B1 Ziklackerstr., 24, Switzerland)

Filed Mar. 23, 1966, Ser. No. 538,457
Int. Cl. H02j *1/00*
U.S. Cl. 307—11 **7 Claims**

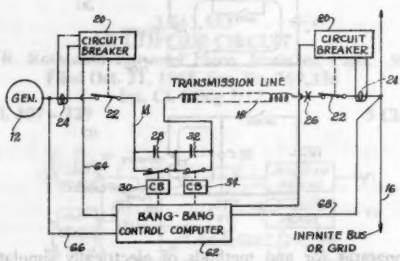


An electrical power supply network having a main power supply line extending from a power supply station to consumer or distributing stations according to a predetermined geometrical configuration designed to result in the distribution of electricity in the most economical manner.

3,562,544
METHOD AND APPARATUS FOR BANG-BANG CONTROL OF REACTANCE TO RESTORE STABILITY IN MINIMUM TIME IN A POWER SYSTEM INVOLVING TIE LINES

Daniel K. Reitan and Rama Rao Nagavarapu, Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis., a corporation of Wisconsin

Filed May 21, 1969, Ser. No. 826,452
Int. Cl. H02j *1/00*
U.S. Cl. 307—85 **11 Claims**

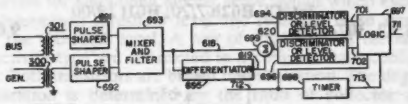


The present invention restores a generator or generating station to its original condition of steady state equilibrium following a transient disturbance involving the momentary opening and subsequent reclosure of the circuit breakers in a tie line between the generator and a large power grid. Simultaneously with the reclosure of the breakers, a first capacitive reactance is connected in series with the line, to increase its power handling capability, so that the leading power angle of the generator will be reduced. Before the generator reaches its original power angle, an additional capacitive reactance is introduced in series with the line, to cause reverse power flow along the line, so that power is supplied to the generator by the grid. Thus, the generator is accelerated so that it returns to its original power angle and angular velocity. Both capacitive reactances are then short circuited or otherwise removed from the line so that the original condition of steady state equilibrium is restored.

3,562,545
AUTOMATIC GENERATOR SYNCHRONIZING AND CONNECTING SYSTEM AND SYNCHRONIZER APPARATUS FOR USE THEREIN

Tibor Rubner, Pittsburgh, Pa.; Andre Wavre, Monroeville, Pa., and John H. Bednarek, Murrysville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa., a corporation of Pennsylvania

Filed Jan. 4, 1968, Ser. No. 695,684
Int. Cl. H01j *3/00*
U.S. Cl. 307—87 **11 Claims**

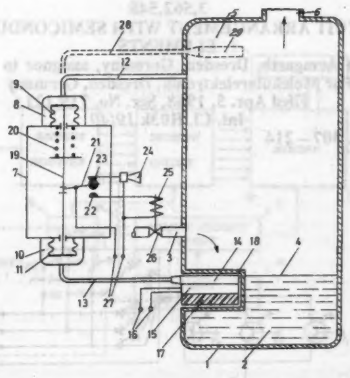


The synchronizing system includes a voltage acceptor having an overvoltage-undervoltage detector which measures the voltage of the oncoming generator and the voltage on the bus and readies a circuit for operation when these voltages are within permissible limits. Further, a voltage matcher is provided to cause the voltages to come within acceptable limits. A speed matcher is used to change the frequency of the bus. A synchronizer gives a closing signal to a circuit breaker at a definite time (corresponding to the circuit breaker closing time) before the two voltages are in phase.

3,562,546
APPARATUS FOR LIMITING THE LEVEL OF A LIQUID IN A CONTAINER

Asger Kraemer, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark, a company of Denmark

Filed Apr. 15, 1969, Ser. No. 816,328
Int. Cl. H01h *37/00*
U.S. Cl. 307—117 **6 Claims**



The invention relates to control apparatus for limiting the level of the liquid in a container to a predetermined level. A

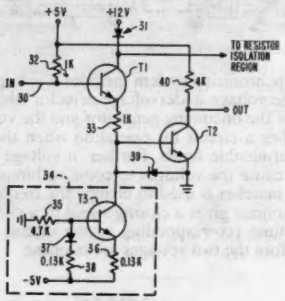
thermostatic element combined with a heating element comprises an assembly which senses and is subjected to a relatively lower temperature when surrounded by a liquid in the container than it does when the liquid level is lower than the level of the assembly. The mode of operation is based on the thermostatic element operating an electrical switch, through pressure responsive means, which controls the supply of liquid to the container. The switch has on and off positions which correspond to the upper and lower temperatures to which the thermostatic element is subject. The absolute values of the upper and lower temperatures to which the thermostatic valve may be subjected may vary substantially depending on the temperature of the liquid and the ambient temperature but the temperature differential between the absolute temperatures is substantially constant. The invention involves the providing of pressure compensating means so that it is only the temperature differential between the upper and lower temperatures to which the thermostatic element is subjected that causes the switch to be actuated to its on or off position.

3,562,547

PROTECTION DIODE FOR INTEGRATED CIRCUIT

Gerald D. Brode, Sayre, Pa.; James F. Malia, Owego, and William K. Mead, Endicott, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y., a corporation of New York

Filed Apr. 17, 1967, Ser. No. 631,533
Int. Cl. H02h *7/20;* **H01l** *19/00*
U.S. Cl. 307—202 **9 Claims**



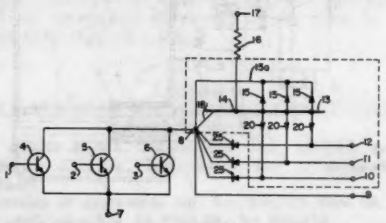
A transistorized single-ended receiver circuit and a double-ended receiver circuit are provided with a protective diode to limit current resulting from overvoltage at the input during operation or normal voltage at the input whenever the receiver circuits are deenergized.

3,562,548

CIRCUIT ARRANGEMENT WITH SEMICONDUCTOR ELEMENTS

Dietrich Armgarth, Dresden, Germany, assignor to Arbeitsstelle Fur Molekularelektronik, Dresden, Germany

Filed Apr. 5, 1968, Ser. No. 719,121
Int. Cl. H03k *19/40*
U.S. Cl. 307—214 **5 Claims**



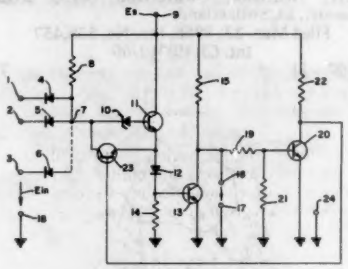
A switching circuit for performing logic operations in which the collector electrodes of a plurality of input transistors are joined into a nodal point and the emitter electrodes are connected in parallel while the base electrodes serve as separate inputs. The nodal point is then connected to the collector electrode of an inversely operated multiemitter transistor, the base electrode of which is returned to a source of potential while the emitter electrodes thereof form output terminals.

3,562,549

SEMICONDUCTOR LOGIC CIRCUIT

Juergen Teichmann, Dresden, Germany, assignor to Arbeitsstelle Fur Molekularelektronik, Dresden, Germany

Filed May 21, 1968, Ser. No. 730,869
Int. Cl. H03k *19/36, 5/08*
U.S. Cl. 307—215 **8 Claims**



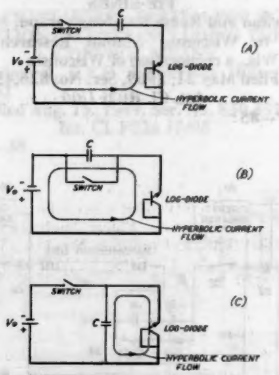
A plurality of diode inputs is connected through a Zener diode clipper and amplifier circuit with a subsequent output stage so that the Zener voltage determines the initial shifting voltage level. To change this initial level, a conventional negator controls a transistor connected in parallel with said clipper and amplifier circuits, and turns off the latter in dependence on the output condition.

3,562,550

METHOD OF AND APPARATUS FOR GENERATING HYPERBOLIC FUNCTIONS

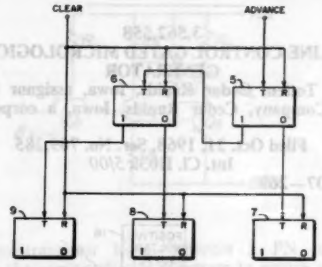
Harry Fein, 832 Quarter Mile Road, Orange, Conn. 06477

Filed Sept. 25, 1967, Ser. No. 670,338
Int. Cl. G06g *7/12;* **G06f** *15/34*
U.S. Cl. 307—229 **11 Claims**



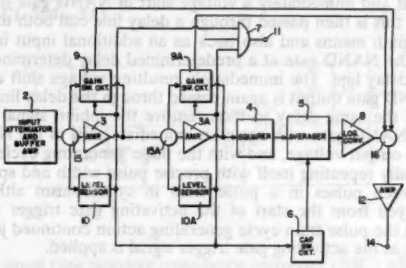
Apparatus for and methods of electrically simulating a hyperbolic function are disclosed. The function generator comprises suitably interconnected capacitor, constant voltage source and nonlinear circuit element; charging or discharge current of the capacitor being supplied through the nonlinear element which may be a transistor connected as a diode. Discharge of the capacitor is controlled by a suitably connected solid state switch.

3,562,551
UNIT DISTANCE COUNTER
Franklin H. Fowler, Jr., Fullerton, Calif. assignor, by mesne assignments, to the United States of America as represented by the Secretary of the Army
Filed Sept. 20, 1967, Ser. No. 669,317
Int. Cl. H03k *21/00*
U.S. Cl. 307—220 5 Claims



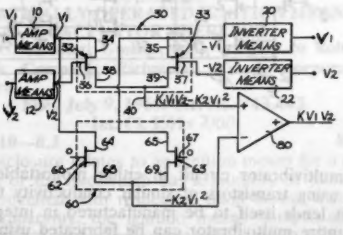
A unit distance counter having $(n-1)$ digit conventional counters, an n digit register, and controls for changing the contents of the register when a count is sensed. The conventional counters and register are made up of flip-flop units.

3,562,552
RMS TO LOG CONVERTER CIRCUIT
Louis J. Baudino, Jr., Littleton, and James A. Bright, Denver, Colo., assignors to Honeywell Inc., Minneapolis, Minn., a corporation of Delaware
Filed Feb. 16, 1968, Ser. No. 705,963
Int. Cl. G06g *7/24*
U.S. Cl. 307—229 13 Claims



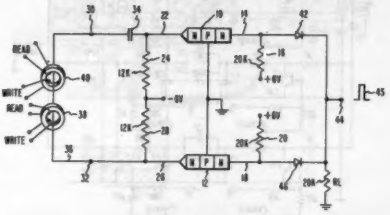
There is provided a circuit which operates upon a complex input waveform to produce an output signal which is a DC log signal proportional to the RMS value of an AC input signal.

3,562,553
MULTIPLIER CIRCUIT
Allen R. Roth, 333 Carousel Place, Anaheim, Calif. 92806
Filed Oct. 21, 1968, Ser. No. 769,336
Int. Cl. G06g *7/12*
U.S. Cl. 307—229 5 Claims



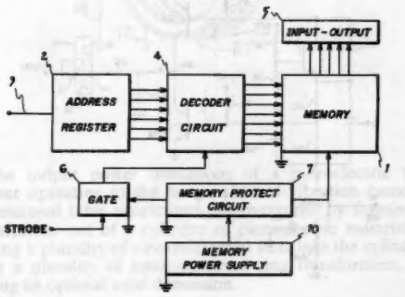
A multiplier including field effect transistor (FET) devices wherein an FET correction means is employed to substantially minimize nonlinearity and error in multiplier operation.

3,562,554
BIPOLAR SENSE AMPLIFIER WITH NOISE REJECTION
John L. Von Feldt, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y., a corporation of New York
Filed Jan. 15, 1968, Ser. No. 697,711
Int. Cl. H03k *5/20*
U.S. Cl. 307—236 9 Claims



A circuit for amplifying bipolar sense signals which exceed a predetermined threshold level and rejecting noise signals below the threshold level. A pair of transistors of the same conductivity type are connected in a common base configuration. Both transistors are biased into saturation. The degree of saturation is determined by the ratio of collector and emitter bias currents. The emitters of the transistors are connected to the sense line of a magnetic core memory. A sense signal below the predetermined threshold level will not drive either transistor out of saturation. A sense signal above the threshold level will drive one of the transistors out of saturation to produce an output signal in the form of a voltage increase on the collector of that transistor. The other transistor will be driven further into saturation and will not produce an output signal. The noise rejection level of the circuit is the minimum level of a sense signal required to drive a transistor out of saturation. Once a transistor is taken out of saturation and into the active region, it acts as a high gain voltage amplifier.

3,562,555
MEMORY PROTECTING CIRCUIT
Richard W. Ahrons, Somerville, N.J., assignor to RCA Corporation, a corporation of Delaware
Filed Sept. 1, 1967, Ser. No. 665,126
Int. Cl. H03k *1/12*
U.S. Cl. 307—238 8 Claims

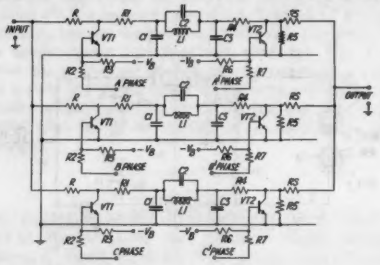


A circuit for monitoring the power supply for a memory system which is arranged to inhibit operation of the memory system during a power supply failure while maintaining a temporary supply of power to the memory system.

3,562,556
N-PATH FREQUENCY TRANSLATION SYSTEM

Donald Robert Barber, Bishop's Stortford, and Michael John Gingell, Harlow, England, assignors to International Standard Electric Corporation, New York, N.Y., a corporation of Delaware

Filed Dec. 9, 1966, Ser. No. 605,949
Claims priority, application Great Britain, Dec. 9, 1965, 52293/65
Int. Cl. H03k *1/16*
U.S. Cl. 307—295 15 Claims

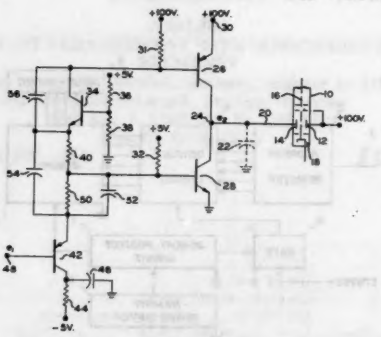


The invention provides a frequency translation system having N-paths which are identical and connected in parallel. Each of the paths includes at least one input modulator unit, a filter unit and at least one output modulator unit. The modulator units sample in turn a given input frequency spectrum for a set period of time determined by the number of paths N. The input and output modulator units are unbalanced. The output of each of the paths is connected to a summation unit to produce output frequency spectrums which are either an erect or inverted translation of the input frequency spectrum.

3,562,557
COMPLEMENTARY TRANSISTOR CIRCUIT FOR DRIVING AN OUTPUT TERMINAL FROM ONE VOLTAGE LEVEL TO ANOTHER, INCLUDING TRANSISTOR COUPLING MEANS BETWEEN COMPLEMENTARY TRANSISTORS

John M. P. Gates, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg., a corporation of Oregon

Filed Feb. 28, 1968, Ser. No. 708,855
Int. Cl. H03k *17/00*
U.S. Cl. 307—255 7 Claims

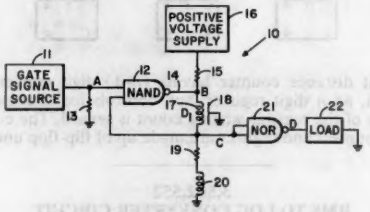


A circuit for driving a cathode ray tube deflection blanking plate or the like comprises a pair of complementary transistors having their collector electrodes coupled to such blanking plate, and having their respective emitters coupled to positive and negative voltage points. Means interconnect the transistor bases for coupling a signal therebetween. The transistors are biased so that one is normally cut off while the other is in saturation. An input provided to one such transistor reverses the states of both transistors so that the transistor which was previously cut off now saturates, and the previously conducting transistor is cut off. The cathode ray tube blanking plate is thereby rapidly driven from one voltage level to another.

3,562,558
DELAY LINE CONTROL GATED MICROLOGIC CLOCK GENERATOR

Floyd M. Totten, Cedar Rapids, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa, a corporation of Iowa

Filed Oct. 21, 1968, Ser. No. 769,285
Int. Cl. H03k *5/00*
U.S. Cl. 307—269 8 Claims

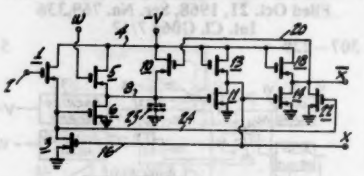


A delay line and logic control gated micrologic circuit clock signal pulse train generator with each pulse waveform clock signal in synchronism with its initiating gate trigger signal. A NAND gate receives an activating gate trigger signal and immediately a voltage shift in NAND gate output with this is then passed through a delay line coil both to output path means and also back as an additional input inhibit for the NAND gate at a predetermined delay determined by the delay line. The immediately resulting voltage shift at the NAND gate output is again passed through the delay line coil with the same delay to then remove the inhibit signal from the NAND gate with again an immediate shift in the NAND gate output voltage, and with the pulse generating cycle continually repeating itself with precise pulse width and spacing between pulses in a pulse train in synchronism although delayed from the start of the activating gate trigger signal with the pulse train cycle generating action continued just so long as the activating gate trigger signal is applied.

3,562,559
P-MOS MULTIVIBRATOR

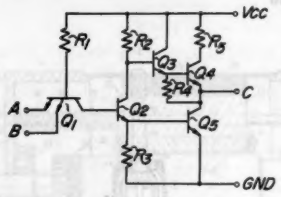
Aldoph Karl Rapp, Princeton, N.J., assignor to RCA Corporation, a corporation of Delaware

Filed Nov. 29, 1967, Ser. No. 686,411
Int. Cl. H03k *3/26*
U.S. Cl. 307—279 6 Claims



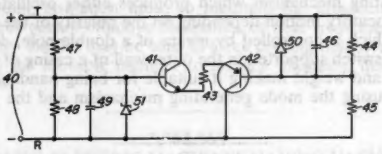
A multivibrator circuit in either monostable or astable form using transistors of similar conductivity types, which circuit lends itself to be manufactured in integrated form. The entire multivibrator can be fabricated using only insulated-gate field-effect transistors of one conductivity type.

3,562,560
TRANSISTOR-TRANSISTOR LOGIC
Hiroyuki Osako, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan, a corporation of Japan
Filed Aug. 21, 1968, Ser. No. 754,213
Claims priority, application Japan, Aug. 23, 1967, 42/53,739
Int. Cl. H03k *19/08*
U.S. Cl. 307—303 8 Claims



Transistor-transistor logic, wherein a PN junction is formed in the semiconductor substrate to assure a sufficient transient current to flow when the two transistors at the output stage become transiently "on," said PN junction being reversely biased to exhibit a barrier capacitance and said capacitance being coupled in parallel with the circuit, thereby sufficient circuit operation and high reliability being obtained with a simple structure.

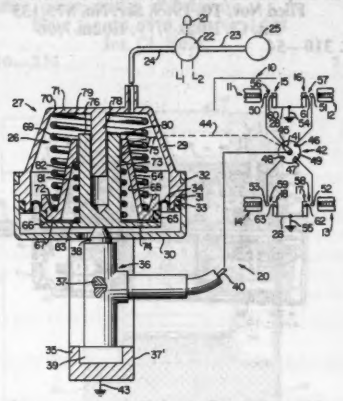
3,562,561
SHUNT-TYPE NEGATIVE IMPEDANCE CONVERTER WITH BOTH SHORT AND OPEN CIRCUIT STABILITY
Carsten H. Klosterman, Winfield, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J., a corporation of New York
Filed Mar. 21, 1969, Ser. No. 809,093
Int. Cl. H03k *3/26*; H03f *15/00*; H03j *3/20*
U.S. Cl. 307—313 3 Claims



A shunt type negative impedance converter (NIC) which is normally only short circuit stable is also made open circuit stable by internal circuit action so that it can be used in shunt across telephone trunk circuits to cancel the resistance of central office battery feed resistors. It includes two transistors of opposite conductivity type with a resistive voltage divider and a Zener diode controlling the base biasing voltage of the PNP transistor. Whenever a telephone subscriber goes on-hook, presenting a substantially open circuit to the converter, the action of the voltage divider and the Zener diode causes both transistors to switch to their nonconducting states.

3,562,562
PNEUMATICALLY OPERATED IGNITION MEANS AND ACTUATOR THEREFOR
Kenneth G. Kreuter, Goshen, Ind., assignor to Robertshaw Controls Company, Richmond, Va., a corporation of Delaware
Filed July 9, 1968, Ser. No. 743,443
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.3 8 Claims

This disclosure relates to an ignition means for a cooking apparatus or the like which has a plurality of pilot burner means associated with respective main burner means of a cooking apparatus, the ignition means comprising piezoelectric crystal means which has its stresses altered in a repetitive manner by a pneumatically operated acutator that cycles itself automatically to provide repetitive impacts on the crystal means to produce an ignition spark output that

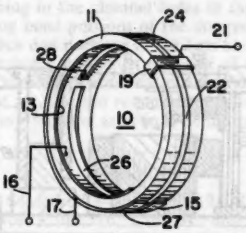


is distributed in series to all of the pilot burner means in sequence to assure that all of the pilot burner means are ignited once the ignition means is rendered operative.

ERRATUM

For Class 310—8.7 see:
Patent No. 3,561,831

3,562,563
CIRCUMFERENTIALLY SLOTTED TUBULAR PIEZOELECTRIC TRANSFORMER
Hugo W. Schafft, Des Plaines, Ill., assignor to Motorola, Inc., Franklin Park, Ill., a corporation of Illinois
Filed Mar. 26, 1969, Ser. No. 810,484
Int. Cl. H01v *7/00*
U.S. Cl. 310—9.5 17 Claims

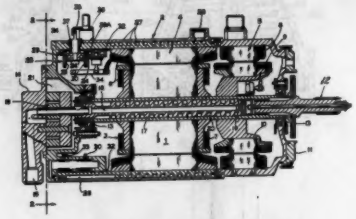


The output power limitations of a piezoelectric transformer operating in the hoop mode of vibration caused by dimensional ratio restrictions are overcome by forming the transformer out of a cylinder of piezoelectric material and cutting a plurality of circumferential slots into the cylinder to form a plurality of interconnected ring transformers, each having an optimal axial dimension.

ERRATA

For Classes 310—9.6, 316—46 and 310—49 see:
Patent Nos. 3,561,832, 3,561,833 and 3,561,834

3,562,564
BRUSHLESS OIL-COOLED GENERATOR
Frederick M. Potter, Little Silver, N.J., assignor to The Bendix Corporation, a corporation of Delaware
Filed Nov. 10, 1969, Ser. No. 875,135
Int. Cl. H02k 9/19; H02m 7/06
U.S. Cl. 310—54 10 Claims

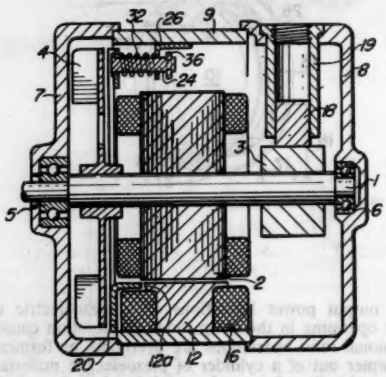


A brushless DC oil cooled generator utilizing delta windings displaced by 30 electrical degrees, feeding through a full wave rectifier system to a common bus. Also improved means are provided for cooling and mounting the rectifiers.

ERRATUM

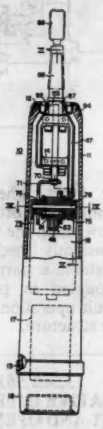
For Class 310—66 see:
Patent No. 3,561,835

3,562,565
DC MOTOR CONTAINING A BRAKE MEANS
Toshimitsu Higashino, Inazawa-shi, and Sinichi Inagaki, Anjo-shi, Japan, assignors to Nippon Denso Kabushiki Kaisha, Kariya-shi, Japan, a corporation of Japan
Filed Sept. 8, 1969, Ser. No. 856,068
Claims priority, application Japan, Nov. 27, 1968, Dec. 12, 1968, 43/87229;43/108645
Int. Cl. H02k 7/112
U.S. Cl. 310—77 3 Claims



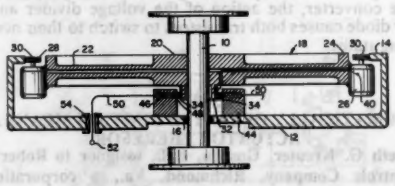
A DC motor which contains a novel brake means within it, said brake means comprising a magnetic disc which is pressed against the cooling fan of the motor by means of springs when the motor is not energized, but which is automatically separated from the fan by the magnetic force produced by the field windings when the motor is energized thereby to relieve the braking force.

3,562,566
POWER OPERATED TOOTHBRUSH PRODUCING EITHER OSCILLATORY OR RECIPROCATORY MOTIONS
Paul J. Kircher, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa., a corporation of Pennsylvania
Filed Feb. 16, 1967, Ser. No. 616,646
Int. Cl. H02k 7/06
U.S. Cl. 310—80 7 Claims



A power operated toothbrush capable of providing two distinct modes of operation. An electrically reversible motor unit including an output shaft imparts movement to mode generating mechanism which produces either oscillatory or reciprocatory motion depending on the polarity of the motor unit which is controlled by means of a double-pole, double-throw switch supported in the outer wall of a casing of a size, shape and weight making it suitable for being handheld and for housing the mode generating mechanism and the power unit.

3,562,567
CYCLIC LOAD DRIVE
Eugene P. Carini, 800, 28th Ave., Vero Beach, Fla. 32960
Filed Jan. 29, 1970, Ser. No. 6,840
Int. Cl. H02k 7/00
U.S. Cl. 310—112 7 Claims



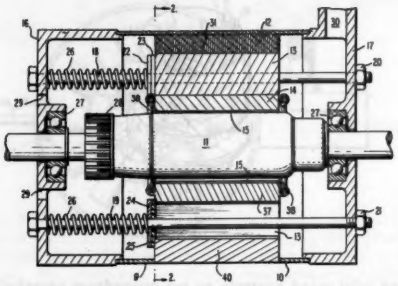
An electric drive system wherein the driven member comprises an integral unit including a plurality of electric motors, suitable torque transmitting means and means for intermittently delivering electric power to the motors. The electric motors are rigidly mounted to the periphery of the driven member, the motors thus rotating with the driven member.

3,562,568

HIGH PERFORMANCE DYNAMOELECTRIC MACHINE WITH PERMANENT MAGNET STATOR

Robert A. Susdorf, and Fredrick J. Armstrong, Fort Wayne, Ind., assignors to General Electric Company, a corporation of New York

Filed June 9, 1969, Ser. No. 831,466
Int. Cl. H02h 21/26
U.S. Cl. 310—154 18 Claims



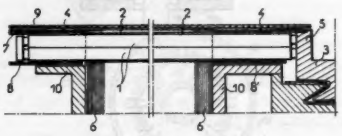
High-performance dynamoelectric machine capable of rapid response to fast changing operational requirements and conditions incorporates stator having magnetic poles and shell. Each pole comprises two axially extending separated pole pieces connected to shell by two or more axially extending permanent magnets. Pole pieces are separated transversely by a space in which a conductor is disposed. Conductors are connected to form a short-circuited winding. Low inertia rotor includes a magnetic core having stub shafts secured to ends thereof and a commutator on one stub shaft. Conductors in circuit with commutator extend axial length of rotor core and are embedded in insulating material compatible with other insulation used, to maintain the conductors in place but permit effective dissipation of heat from the rotor assembly. Baffles may be used to force cooling fluid over and around the movable member to provide increased heat dissipation.

3,562,569

DYNAMO-ELECTRIC MACHINES HAVING VACUUM CAST WINDING INSULATION

Paul Koechlin, Belfort, France, assignor to UNELEC, Paris, France, a business firm under French law

Filed Oct. 31, 1968, Ser. No. 772,334
Claims priority, application France, Nov. 3, 1967, 2,777
Int. Cl. H02k 3/48
U.S. Cl. 310—214 2 Claims



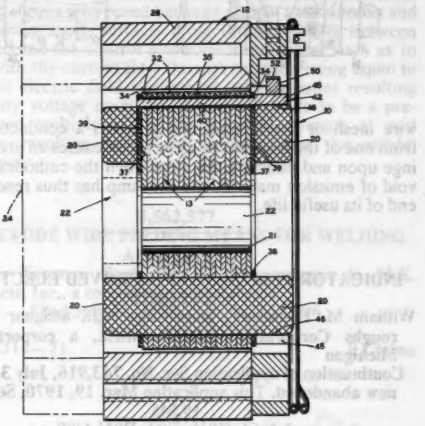
A rotor structure having a thin jacket of closely wrapped nonmagnetic strandlike material, such as fiberglass tape, nonmagnetic steel wires, fiber strands, or the like are wrapped around the rotor structure, the closely wrapped material being impregnated with the insulating material in hardened condition, so that, during manufacture, the wrapping may serve as a mold for vacuum casting of liquid insulation to fill all interstitial spaces between the windings.

3,562,570

ARMATURE-COMMUTATOR ASSEMBLY AND METHOD OF ASSEMBLING AN ARMATURE-COMMUTATOR

George Frank, Cupsaw Lake, N.J., assignor to The Bendix Corporation, a corporation of Delaware

Filed Jan. 20, 1970, Ser. No. 4,254
Int. Cl. H02k
U.S. Cl. 310—234 7 Claims



An armature-commutator assembly and method of assembling an armature-commutator of a type formed of ferromagnetic lamina or sheet metal plates having slots defined by radially extending teeth with a hole extending axially through each tooth of each lamina. The axially extending holes in each tooth of the assembled armature lamina providing a longitudinally extending channel opening in which an insulating tubing may be inserted so as to extend therethrough for receiving therein a shank or stem portion of a commutator bar. In assembling the armature-commutator, the stem portion of each of the commutator bars are initially only partially inserted into the insulating tubing in the channel holes in the commutator teeth so that appropriate connections may be then made between electrical terminal ends of coil windings wound in the slots of the armature defined by the radially extending teeth of the armature. The stem portions of the commutator bars thereafter are fully inserted into the insulating tubing in the channel holes in the armature teeth with projecting head portions of the commutator bars being provided at free end portions of the bars so as to form an effective commutator surface at one end of the armature assembly. The armature-commutator assembly is then potted and machined to meet the requirements of the dynamoelectric machine in which the same is to be utilized.

ERRATA

For Classes 313—65 and 313—85 see:
Patent Nos. 3,562,516, 3,562,517 and 3,562,518

3,562,571

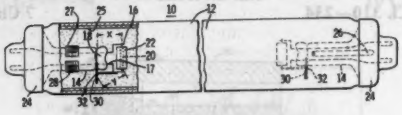
MERCURY-VAPOR DISCHARGE LAMP WITH AMALGAM-TYPE VAPOR-PRESSURE REGULATOR AND INTEGRAL FAIL-SAFE AND FAST WARM-UP COMPONENT

George S. Evans, Caldwell, and Chalmers Morehead, Upper Montclair, N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa., a corporation of Pennsylvania

Filed June 12, 1969, Ser. No. 832,665
Int. Cl. H01j 61/24
U.S. Cl. 313—109 10 Claims

The time required for an amalgam-regulated fluorescent lamp to stabilize and reach its rated light output under "cold-start" conditions is reduced by providing a small auxiliary body of amalgam on a selected portion of a metal conductor that is attached to one of the electrode structures within the lamp and is so arranged that it serves the dual function of a

"fail-safe" component. The auxiliary body of amalgam is so located with respect to the adjacent cathode that it is rapidly heated and releases mercury vapor as soon as the lamp is energized. The "fail-safe" conductor is preferably made of



wire mesh or sheet metal and provides a conductive path from one of the leads to the stem which causes an arc to impinge upon and puncture the stem when the cathodes are devoid of emission material and the lamp has thus reached the end of its useful life.

3,562,572

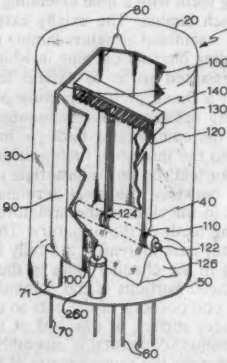
INDICATOR TUBE HAVING IMPROVED ELECTRODE SUPPORTS

William M. Hennessey, Somerville, N.J., assignor to Burroughs Corporation, Detroit, Mich., a corporation of Michigan

Continuation of application Ser. No. 743,916, July 3, 1968, now abandoned. This application Mar. 19, 1970, Ser. No. 19,545

Int. Cl. H01k *7/04;* **H01j** *1/88*

U.S. Cl. 313—109.5 **9 Claims**



The disclosure is of a cold cathode, gas-filled indicator tube which includes an anode electrode and a stack of cathode electrodes in the form of characters which face the sidewall of the envelope as a viewing window. The envelope includes a base or stem which is generally flat and carries tube pins which are connected directly to the lower ends of the cathode electrodes. The upper ends of the cathodes carry tabs which slip into, and are held in, a tray which has an open side and a slotted bottom wall. The tray may be made up of two identical parts, each having an open sidewall for receiving cathode tabs.

3,562,573

GLOW SUPPRESSION IN INDICATOR TUBES

Frederick Gustav Adolf Haegele, Exeter, South Devon, England, assignor to International Standard Electric Corporation, New York, N.Y., a corporation of Delaware

Filed Oct. 3, 1968, Ser. No. 764,696

Claims priority, application Great Britain, Oct. 12, 1967, 46,533/67

Int. Cl. H01j *61/66;* **H01k** *7/04*

U.S. Cl. 313—109.5 **5 Claims**

An insulating shield is interposed between the anode cup and extending portions of cathode leads in a glow discharge indicator tube to prevent the spread of discharge along the

leads. The leads pass through an aperture in the anode cup and shield.

3,562,574

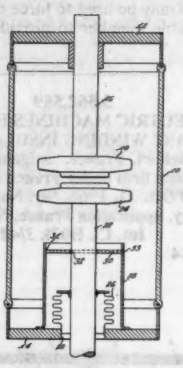
ARTICLES PLATED WITH OR COMPRISED OF SILVER-PALLADIUM ALLOYS

Henry J. Wesoloski, 299 Blue Hill Parkway, Milton, Mass.

Original application May 4, 1965, Ser. No. 453,009, now abandoned. Divided and this application July 25, 1968, Ser. No. 761,379

Int. Cl. H01j *1/02*

U.S. Cl. 313—146 **3 Claims**



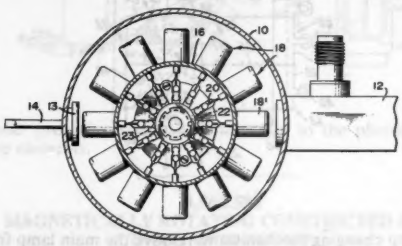
A high voltage vacuum switch having a sealed envelope with a pair of relatively movable electrodes within the envelope between which arcing occurs. One of the electrodes is reciprocably movable in an axial direction within the envelope and is guided by a rigidly supported washer during axial movement, the washer having a plating of silver-palladium alloy for gettering gas within the envelope. The alloy is formed by depositing silver on the washer and depositing palladium on the silver and heat treating both of the metals to effect diffusion.

3,562,575

ELECTRON BEAM TUBE CONTAINING A MULTIPLE CATHODE ARRAY EMPLOYING INDEXING MEANS FOR CATHODE SUBSTITUTION

T. O. Paine, administrator of the National Aeronautics and Space Administration, with respect to an invention of Lloyd J. Derr, Los Angeles, Calif.

Filed Sept. 9, 1969, Ser. No. 856,415
Int. Cl. H01j 9/02
U.S. Cl. 313—236 10 Claims



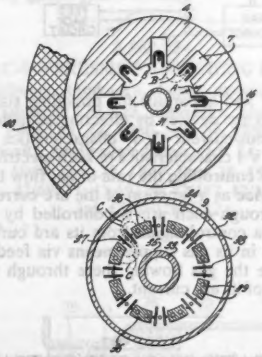
An indexing mechanism for an electron beam tube having many electron guns arranged on a turret, which rotates the turret to replace the gun being used when it fails, and to rotate the turret to serially activate the cathodes of the guns during construction of the tube. One indexing apparatus employs an indexing wheel fixed to the turret, a stack of bimetallic washers, and a heater for making the washers buckle to move a pawl member toward the indexing wheel to advance it. Another indexing apparatus includes an indexing wheel fixed to the turret, a thermal motor that can rotate a shaft, a latch arm on the shaft that pivots out of engagement with the indexing wheel during the first few degrees of shaft rotation, and a pair of driving members that rotate the wheel after the latch arm disengages from it.

3,562,576

THREE-ELEMENT ELECTRON DISCHARGE TUBE

Alexander Rusterholz, Zurich, Switzerland, assignor to Patelhold Patentverwertungs and Electro-Holding A.G., Glarus, Switzerland

Filed Mar. 12, 1968, Ser. No. 712,451
Claims priority, application Switzerland, Mar. 15, 1967, 3725
Int. Cl. H01j 1/46, 21/10
U.S. Cl. 313—299 9 Claims



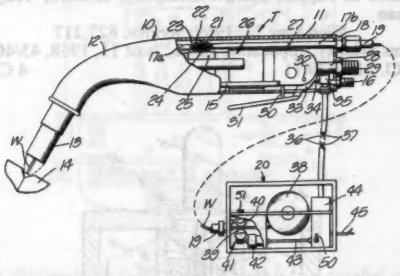
In a high-vacuum electron tube, an elongated cylindrical control electrode is surrounded by an anode electrode including a plurality of segmental elongated partial anode surfaces extending parallel to and concentric with the axis of said control electrode and a plurality of incandescent cathode wires are disposed also parallel to said axis and each within the space intervening between adjacent anode surfaces. A magnetic field extending in a direction parallel to said axis within the space enclosed by said control electrode and said anode surfaces acts to deflect the electron streams emitted by said cathodes towards the adjacent anode surfaces and to thereby reduce the number of electrons reaching the control electrode. This in turn reduces the power necessary to drive the tube, in particular for tubes operated at a positive control potential (class-C operation). In order to achieve a desired amplification factor of the tube, individual shielding means interposed between each of the cathodes and the adjoining anode surfaces project into the space between the latter and the control electrode to an extent such as to cause, with the current flow through the tube being equal to zero, the electric field strength at said cathodes resulting from unity voltage upon the control electrode to be a predetermined multiple of the electric field strength at said cathodes resulting from unit voltage upon the anode, respectively.

3,562,577

ELECTRODE WIRE FEEDING MEANS FOR WELDING APPARATUS

Milo M. Kensrue, Santa Ana, Calif., assignor to M.K. Products, Inc., a corporation of California

Filed July 11, 1968, Ser. No. 744,006
Int. Cl. H05b 31/18
U.S. Cl. 314—71 9 Claims



Electrode wire-feeding means for electric arc-welding apparatus in which the electrode wire is conducted through a flexible conduit from a remote wire source to a manually operable welding gun at the point of use, first wire feed rollers at the gun being driven by an air motor controlled at the gun to regulate the rate of wire feed and pull the wire through the flexible conduit, second wire feed rollers being provided at the wire source driven by an electric motor, known in the industry as a "torque motor," for applying a propelling force to the wire, such force having a maximum limit as determined by the maximum stalled output torque of the motor, this motor having an energizing circuit controlled by a switch at the gun, and including selective switch controlled means operable at the remote station for changing the value of the maximum stalled output torque of the electric motor depending upon whether a relatively large or small sized wire is being used.

3,562,578

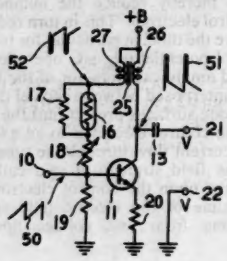
VERTICAL DEFLECTION CIRCUIT OF TELEVISION RECEIVER

Michiaki Takahashi, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Apr. 22, 1969, Ser. No. 818,358
Claims priority, application Japan, Apr. 25, 1968, 27380
Int. Cl. H01j 29/76
U.S. Cl. 315—27 14 Claims

A vertical deflection circuit of a television receiver having a transformer of which a primary winding is connected to a collector of a vertical deflection output transistor, a thermosensitive resistance element such as a thermistor which is connected between a second winding of the said transformer and a base of the said transistor. The thermosensitive re-

sistance element controls a direct current bias to a base of the transistor and at the same time, controls feedback quanti-



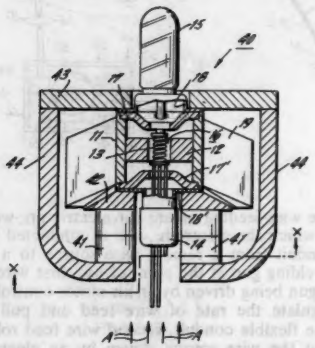
ties of an alternating current positive feedback to the base of the transistor.

3,562,579

ELECTRON DISCHARGE DEVICE EMPLOYING INEXPENSIVE PERMANENT MAGNETS OF SIGNIFICANTLY REDUCED SIZE

Shigeki Kakizawa, and Tetsuro Otani, Tokyo-to, Japan, assignors to Nippon Electric Company, Limited, Tokyo-to, Japan

Filed May 23, 1969, Ser. No. 827,217
Claims priority, application Japan, June 11, 1968, 43/40057
U.S. Cl. 315—39.71 **4 Claims**



An electron discharge device preferably of the type employed as a heating or cooking means. The magnetic path employed in the device comprises permanent magnet members and associated pole pieces for generating a magnetic field in the interaction space between the anode and cathode electrodes. The magnets are aligned with the longitudinal axis of the device and are positioned as close as possible to the interaction space to increase the flux density of the magnetic field and thereby permit significant reductions in the size of the permanent magnets.

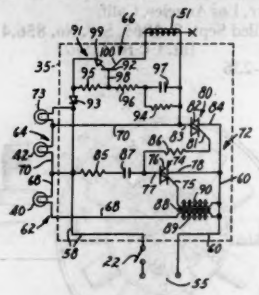
3,562,580

LAMP-FAILURE DETECTION AND CHANGE DEVICE

Jack P. Blomgren, Maplewood; Stanley L. Ross, White Bear, and Peter A. Lind, Minnetonka, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn., a corporation of Delaware

Filed Jan. 10, 1969, Ser. No. 790,279
Int. Cl. H05b *39/10, 41/46*
U.S. Cl. 315—88 **9 Claims**

A device for use in a light projector to automatically replace an expired main lamp with a spare lamp. The main lamp and the spare lamp are socketed in a lamp-changing mechanism which is actuated in response to the operation of a solid-state lamp-failure detector. The detector senses the failure of the main lamp and automatically energizes the spare lamp, an indicating lamp and a release means to permit



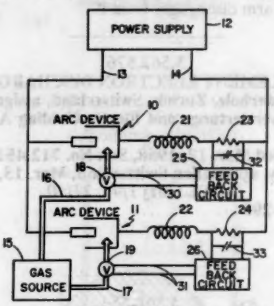
the lamp changing mechanism to remove the main lamp from a focus position in the projector and advance said spare lamp into the focus position.

3,562,581

MEANS FOR AND METHOD OF STABILIZING A PLURALITY OF GASEOUS ELECTRIC ARC DISCHARGE DEVICES

Otto K. Sonju, Woburn, Mass., assignor to Arco Corporation, Cincinnati, Ohio, a corporation of Delaware

Filed Mar. 25, 1968, Ser. No. 715,663
Int. Cl. H01j *7/24*
U.S. Cl. 315—111 **15 Claims**



A method of and apparatus for providing stabilization of gaseous electric arc devices by effecting suitable changes in the voltage-versus-current (V-I) characteristics of such arc devices. Stable V-I characteristics of such electric arc devices are obtained by controlling the rate of gas flow through each electric arc device as a function of the arc current. The rate of gas flow through each arc is controlled by deriving for each such arc a control signal from its arc current and actuating a valve in its gas supply means via feedback circuit means to cause the gas flowing there through to vary as a linear function of its arc current.

3,562,582

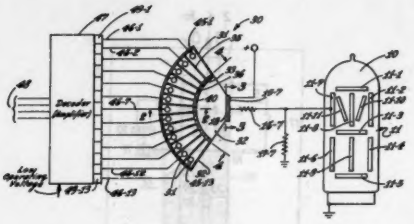
LIGHT OPERATED CHARACTER GENERATOR AND DISPLAY DRIVER

Robert S. Broyles, 1810 S. Broadway 23, Oceanside, Calif.

Filed Oct. 16, 1968, Ser. No. 767,992
Int. Cl. H01j *39/12;* **H05b** *41/18, 41/44*
U.S. Cl. 315—153 **20 Claims**

A circuit for control of a segmented glow discharge tube is specifically disclosed, wherein each segment is triggered for glow discharge through a photoconductive element. The element, when illuminated, connects the respective segment to a

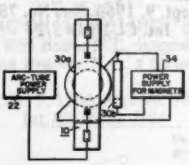
voltage source. The illumination may be controlled through a BCD-decimal decoder and through a particular optical reencoder providing selective illumination to the photoconductive elements.



3,562,583
MAGNETICALLY ROTATING CONSTRICTED ARC-DISCHARGE DEVICE

Robert J. Zollweg, Monroeville, and Walter J. Burnham, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa., a corporation of Pennsylvania

Filed Jan. 27, 1969, Ser. No. 794,203
Int. Cl. H01j 17/14
U.S. Cl. 315—344 **10 Claims**

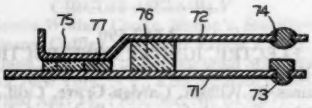


A combination comprising a constricted arc-discharge device having electromagnetic means associated therewith to rotatably direct a resultant magnetic flux generally transverse to and intersecting the constricted arc-discharge maintained during operation. The magnetic flux interacts with the constricted arc-discharge causing it to rotate about the longitudinal axis of the arc-tube. The luminous efficiency of the combination is very high, and the rotation of the discharge prevents early failure of the device.

3,562,584
ARC-SUPPRESSING SWITCHING DEVICE

Koichi Yoshimura, Osaka-Fu, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka-Fu, Japan

Filed Oct. 22, 1968, Ser. No. 769,684
Claims priority, application Japan, Oct. 24, 1967, Oct. 24, 1967, Dec. 28, 1967, Dec. 28, 1967, 42/69117; 42/69118; 42/157, 42/159
Int. Cl. H02h 7/22
U.S. Cl. 317—11 **5 Claims**

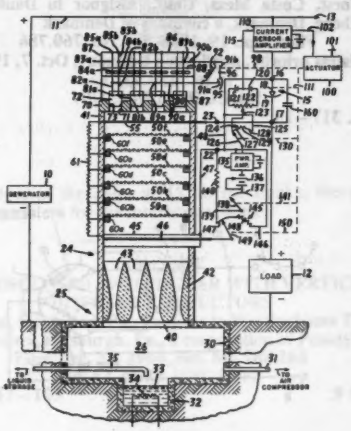


An arc-suppressing switching device particularly for application to bimetallic element containing thermostats of electric blankets, electric irons, electric cookers, electric foot warmers, and the like. The switching device has a high dielectric constant material, electric resistance material or semiconductor material positioned between a fixed contact plate having a fixed contact on its free end and a moving contact plate having a moving contart on its face and, is capable of suppressing or extinguishing the arc which occurs at the opening and closing of the thermostat contacts.

3,562,585
ELECTROGAS-DYNAMIC SYSTEMS ADAPTED FOR CIRCUIT BREAKING AND OTHER PURPOSES

Meredith C. Gourdine, West Orange, N.J., assignor to Gourdine Systems, Incorporated, Livingston, N.J., a corporation of Delaware

Filed Aug. 29, 1968, Ser. No. 756,220
Int. Cl. H02h 7/22
U.S. Cl. 317—11 **17 Claims**

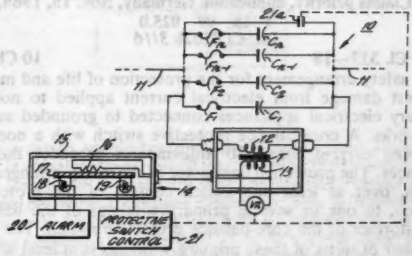


An electrogas-dynamic tube is coupled in parallel with a switch for interrupting high voltage direct current. In course of opening the switch, a flow of ionized fluid in the tube conducts current to prevent arcing across the switch contact or to suppress an arc if it develops.

3,562,586
THERMAL ANALOGUE PROTECTION FOR CAPACITORS

William A. Carter, Devon, and Otto Jensen, Malvern, Pa., assignors to I-T-E Imperial Corporation, Philadelphia, Pa., a corporation of Delaware

Filed Nov. 15, 1968, Ser. No. 776,097
Int. Cl. H02h 7/16
U.S. Cl. 317—12 **5 Claims**



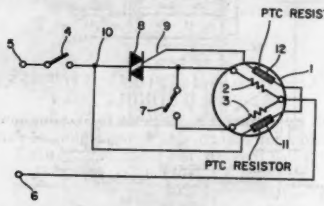
A capacitor protection system is provided having the primary winding of a potential transformer connected across a series capacitor bank to be protected and the secondary winding of the potential transformer connected to a thermal

analogue device which reproduces the thermal characteristics of the capacitor and operates capacitor switching means when dangerous thermal conditions are reached. An inverse time voltage relay is also connected across the secondary winding to initiate protective capacitor switching responsive to high current faults. The thermal analogue device simulates the internal thermal conditions of the capacitor based on the principle that the power loss in the capacitor is proportional to the square of the voltage across the capacitor. Voltage comparison circuits are also provided between groups of capacitors in banks having multiple groups to detect blown fuses associated with respective capacitor groups.

3,562,587
OVERHEATING CONTROL DEVICE FOR ALTERNATING CURRENT MOTOR

Sven Forst, Costa Mesa, Calif., assignor to Danfoss, A/S, Nordborg, Denmark, a company of Denmark

Filed Sept. 19, 1968, Ser. No. 760,786
Claims priority, application Germany, Oct. 7, 1967, P 16 13 734.1
Int. Cl. H02h *7/08, 5/04*
U.S. Cl. 317—13 **2 Claims**



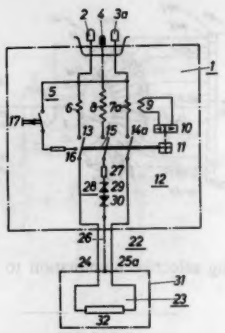
The invention relates to an overheating control device for an alternating current motor. The device comprises a symmetrical controlled semiconductor valve in the motor lead and PTC resistor means thermally coupled to the motor windings. The PTC resistor means is connected to the control electrode of the semiconductor valve and concomitant with a temperature rise in the motor windings, the current flowing through the PTC resistor means decreases to effect a closing of the semiconductor valve.

3,562,588
SAFETY ARRANGEMENT FOR NONSTATIONARY ELECTRICAL APPLIANCES CONNECTED TO GROUNDED SUPPLY NETWORKS

Horst Zielasko, Nordenham-Einswarden, Germany, assignor to Felten & Guilleaume Schaltanlagen GmbH, Krefeld, Germany

Filed Nov. 17, 1969, Ser. No. 877,395
Claims priority, application Germany, Nov. 15, 1968, P 18 09 025.0
Int. Cl. H02h *3/16*
U.S. Cl. 317—18 **10 Claims**

A safety arrangement for the protection of life and matter against damage from electrical current applied to nonstationary electrical appliances connected to grounded supply networks. A core-balance protective switch with a nominal tripping current below 50 milliamperes precedes the appliances. The protective conductor of the safety arrangement leads, over at least one switch contact of the protective switch, to one or several primary windings of the balance transformer of the core-balance protective switch. The total number of turns of these primary windings is at least double the number of turns of one of the primary windings for the connection of one of the phase conductors or of the neutral conductor of the supply network. In the core-balance protective switch a voltage dependent resistor arrangement is connected in series to the protective conductor with such characteristic that its resistivity is high at low voltages but very small at higher voltages. This voltage dependent resistor arrangement consists of two identical single voltage

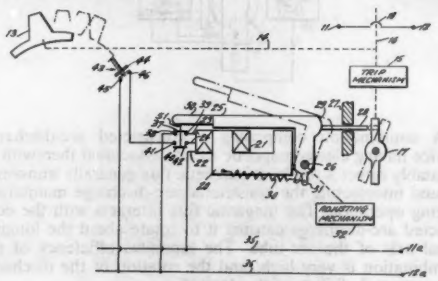


dependent resistors with oppositely directed characteristics, connected in series to each other and to a limiting resistor.

3,562,589
ELECTRICALLY RESETTING UNDERVOLTAGE TRIP FOR CIRCUIT BREAKERS

Felix Myers, and John C. Lucas, Cherry Hill, N.J., assignors to I-T-E Imperial Corporation, Philadelphia, Pa., a corporation of Delaware

Filed Sept. 9, 1968, Ser. No. 758,498
Int. Cl. H01h *3/24*
U.S. Cl. 317—31 **10 Claims**



An undervoltage trip structure for circuit breakers which has an electrical closing coil which moves an armature which in turn operates the trip mechanism of the circuit breaker. The undervoltage coil is then connected in a circuit so that, when the circuit voltage is appropriate, a first portion of the closing coil will operate the armature to permit the tripping mechanism of the circuit breaker to be relatched, whereby the circuit breaker can be closed. After relatching of the trip mechanism, a second circuit is closed connecting the full closing coil in series with the circuit voltage, whereby if an undervoltage or zero voltage exists in the circuit, the armature will be released and the trip mechanism operated before the circuit breaker main contacts have an opportunity to reclose.

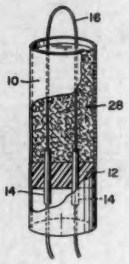
3,562,590
ELECTRIC IGNITER CONSTRUCTION

Richard K. Mitts, Fullerton; Wilbur F. Jackson, Rolling Hills, and James R. Willson, Garden Grove, Calif., assignors to Robertshaw Controls Company, Richmond, Va., a corporation of Delaware

Filed Mar. 17, 1969, Ser. No. 807,509
Int. Cl. F23g *7/10*
U.S. Cl. 317—98 **12 Claims**

An electric igniter assembly including a hollow casing in which the major length of the igniter element is enclosed so that only a small portion is disposed in proximity to a gas

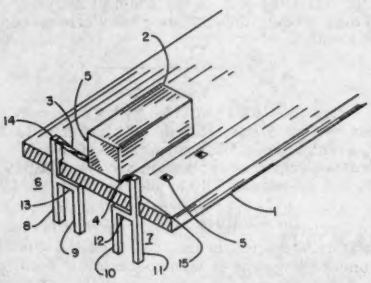
burner; the electrical connectors for the igniter element and the electrodes that are attached to power leads are disposed remote from the flame issuing from the gas burner as well as being fixedly supported in the casing which includes shock absorbent material to reduce possibilities of breakage of the igniter element.



3,562,591
PACKAGING OF MICROLOGIC ELEMENTS

James L. Schmidt, Red Bank, N.J., assignor to Electronic Associates Inc., Long Branch, N.J., a corporation of new Jersey

Filed Dec. 5, 1968, Ser. No. 781,459
Int. Cl. H05k *1/04*
U.S. Cl. 317—101 **3 Claims**



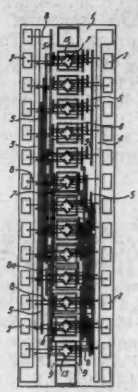
An apparatus for packaging micrologic components having "chair" shaped pins which reduce the space required for a two wire wrap connection from two levels to one while providing easily changeable component mounting.

3,562,592
CIRCUIT ASSEMBLY

Reginald Bejamin William Cooke, Bishop's, Stortford, Francis Brian Robinson, Cuffley, and Peter Ernest Radley, Walden, Essex, England, assignors to International Standard Electric Corporation, New York, N.Y., a corporation of Delaware

Filed Apr. 24, 1969, Ser. No. 819,071
Claims priority, application Great Britain, May 7, 1968, 21470
Int. Cl. H05k *1/04*
U.S. Cl. 317—101 **9 Claims**

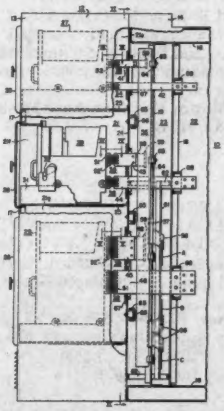
This is a hybrid integrated circuit assembly with an insulating substrate having two sets of conductive or resistive tracks disposed on both sides of integrated circuit chips. The interconnections between the chips and the tracks are kept orderly and short by running at right angles to the tracks. By placing edges of the chips at 45° to the tracks, there is no crossover problem for the interconnections.



3,562,593
METAL-ENCLOSED SWITCHGEAR WITH VERTICALLY DISPOSED CONDUCTORS

Fred Bould, Edgewood, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa., a corporation of Pennsylvania

Filed Dec. 31, 1968, Ser. No. 788,168
Int. Cl. H02b *1/20, 1/12*
U.S. Cl. 317—103 **9 Claims**



In order to enable horizontally extending main phase bus bars in metal-enclosed switchgear to be made in standardized unit lengths, it is necessary that the breaker compartment widths be made a constant dimension. This is achieved by keeping the horizontal distance between poles of the breaker units a constant value irrespective of the current rating of the breakers. The primary disconnect contact system of the removable breaker units is so constructed that the extra conductor cross section required as the current capacity is increased is obtained by changing the vertical dimensions of the current carrying members and keeping the horizontal dimensions substantially constant.

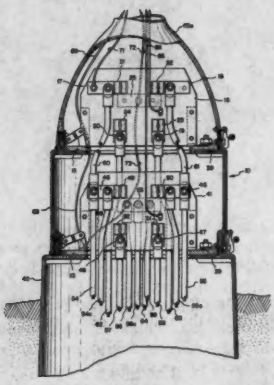
3,562,594
PULLBOX EXTENSION AND ELECTRIC METER HOUSING

Richard Sterling Jones, 3922 S. 775 West, Bountiful, Utah, and George Michael Stevenson, 2080 W. 5900 South, Roy, Utah 84067

Continuation-in-part of application Ser. No. 770,915, Oct. 28, 1968, now abandoned. This application May 12, 1969, Ser. No. 823,886

Int. Cl. H02b 9/00; H02g 7/20

U.S. Cl. 317—106 7 Claims



A pullbox extension in the form of a kilowatt hour meter housing with an open bottom adapted for mounting above a subterranean pullbox to contain a kilowatt hour meter. The top of the pullbox extension is adapted for the securement of a second kilowatt hour meter and a second meter housing.

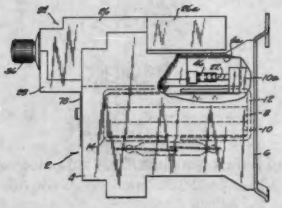
3,562,595
PLUG-IN SOLID-STATE TIMER MODULE FOR CONVERTIBLE REED RELAY

William C. Swanson, and David R. Stewart, Milwaukee, Wis., assignors to Cutter-Hammer, Inc., Milwaukee, Wis., a corporation of Delaware

Filed May 5, 1969, Ser. No. 821,682

Int. Cl. H01h 47/18; H02b 1/04

U.S. Cl. 317—113 4 Claims



A molded cover and case are secured together to retain a printed timing circuit board therein and the assembly is inserted into the housing of a reed relay in the space normally provided for several reed switch modules and a connector module. A second board containing several resistors is housed in an external portion of the case. An auxiliary instantaneous pole unit is optionally provided and has plug-in connections to the printed circuit board, and all wiring terminals are of the pressure plate type.

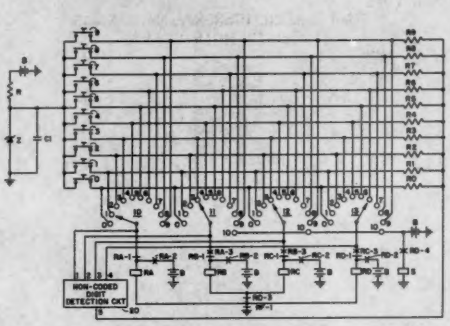
3,562,596
NONCODED DIGIT DETECTION CIRCUIT FOR ELECTRICAL COMBINATION LOCK

Joseph Scheuer, Laurent, Quebec, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed July 16, 1968, Ser. No. 745,322

Int. Cl. H01h 47/00

U.S. Cl. 317—134 4 Claims



This disclosure relates to an electrical combination lock of the type comprising *n* key circuits each having a digit key, *m* digit selecting switches each having *n* inputs connected to an associated digit key and one wiper output which is positioned to contact one of the inputs in accordance with a preselected code, and a chain of *m* relays connected to an associated selecting switch, each relay having a contact in the operating path of the following relay and such relays being sequentially operated one by one to open the electrical lock.

In accordance with the invention, the above electrical lock is provided with a gate circuit having a first input connected to the wipers of the selecting switches, a second input connected to the key circuits and an output circuit adapted to open the operating path of the chain of relays when a noncoded digit is keyed thus restoring the electrical combination lock to normal.

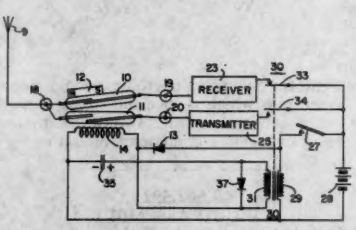
3,562,597
RF COAXIAL RELAY

Winston Wayne White, Hillside, Ill., assignor to Motorola, Inc., Franklin Park, Ill., a corporation of Illinois

Continuation-in-part of application Ser. No. 772,319, Oct. 31, 1968, now abandoned. This application Sept. 10, 1969, Ser. No. 856,581

Int. Cl. H01h 51/27, 1/66, 47/00

U.S. Cl. 317—137 9 Claims



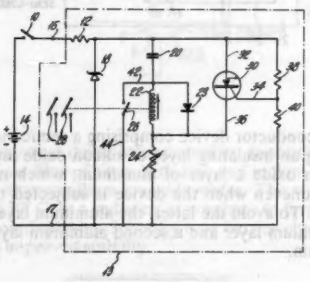
A radio frequency (RF) coaxial relay for connecting either of two coaxial terminals coupled, respectively, to a radio receiver and a radio transmitter, to a third coaxial terminal coupled to an antenna, includes a pair of magnetically actuated reed switches located within a cast nonmagnetic conductive housing. The reed contacts are capable of carrying high currents but are incapable of switching high currents, so that a sequencing circuit is provided so that the contacts of the reed switch coupled to the transmitter do not switch the transmitter when power is applied therefrom. In addition, the

switch leaves of the reeds are copper-plated in order to cause the RF resistance of the reed switches to be low.

3,562,598
SEMICONDUCTOR CONTROLLED SAFETY TIME DELAY RELAY

Arthur E. Dodd, Port Washington, N.Y., assignor to Servo Corporation of America, Hicksville, N.Y., a corporation of New York

Filed June 20, 1968, Ser. No. 738,445
Int. Cl. H01h *47/18*
U.S. Cl. 317—142 **4 Claims**

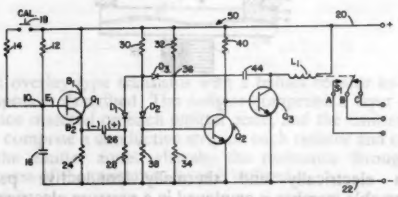


A solid-state circuit is described for controlling a railroad signal delay device wherein the time element is formed by a capacitor and a resistor. A polarized relay is employed in a discharge circuit formed by the capacitor, a semiconductor switch and the coil of the relay. Expiration of the time element operates to close the switch in the discharge circuit. The coil of the relay is so oriented in the circuit that during capacitor charging, the magnetic bias is effectively increased, whereas during the discharge initiated by the closing of the semiconductor switch, the bias is overcome.

3,562,599
CYCLING DELAY CIRCUIT TESTING DEVICE

David R. Dreitzler, Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army.

Filed Dec. 13, 1968, Ser. No. 783,590
Int. Cl. H01h *47/32*
U.S. Cl. 317—142 **5 Claims**

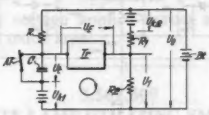


A voltage cycling testing device for a delay circuit. A unijunction relaxation oscillator delivers a trigger pulse to a monostable multivibrator which activates a relay to apply power to a circuit under test. The unijunction transistor is activated periodically for a predetermined time period by a resistance-capacitance network. The relay is deactivated each time the multivibrator switches back to its stable state.

3,562,600
TRIGGER CIRCUIT CONTROLLED DEVICE FOR SHUTTER SPEED ADJUSTMENT IN PHOTOGRAPHIC CAMERAS

Karl-Heinz Koenig, Stuttgart, Germany, assignor to Zeiss Ikon Aktiengesellschaft, Stuttgart, Germany, a corporation of Germany

Filed Aug. 7, 1968, Ser. No. 750,911
Claims priority, application Germany, Aug. 19, 1967, Z13,000
Int. Cl. H01h *47/32*; **G03b** *9/00*
U.S. Cl. 317—142 **4 Claims**

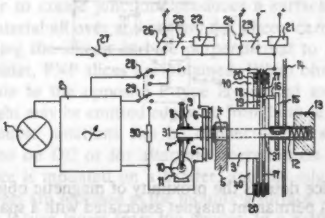


The trigger circuit controlled device of the invention performs an adjustment of the shutter speed in photographic cameras and includes in a bridge circuit a variable chargeable capacitor, a number of transistors and means forming compensation and comparison voltage sources which provide that the shutter speed adjustment is independent of the battery voltage which energizes the bridge circuit and also is independent of ambient temperature changes.

3,562,601
APPARATUS FOR SUPERVISING STARTING OF VEHICLE

Karl Adler, Grenchen, and Georges Ducommun, Feldbrunnen, Switzerland, assignors to Biviator S.A., Geneva, Switzerland

Filed Mar. 24, 1969, Ser. No. 809,644
Claims priority, application Switzerland, Apr. 9, 1968, 5404/68
Int. Cl. H01h *47/22*
U.S. Cl. 317—146 **15 Claims**



An apparatus for supervising starting of a vehicle, wherein the frequency of a flickering luminous indicator has to be adjusted manually to a predetermined value for allowing starting the vehicle, the initial conditions of the apparatus being automatically changed after each use so that said manual adjustment has always to be done under variable conditions.

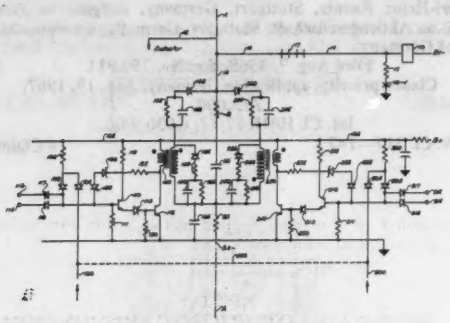
3,562,602
CONTROL CIRCUIT AND METHOD OF CONTROL FOR LATCHING RELAY

John G. Mlacak, Kanata, Ontario, and Doron Cohen, Brampton, Ontario, Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Dec. 13, 1967, Ser. No. 690,354
Int. Cl. H01h *47/04*
U.S. Cl. 317—154 **11 Claims**

Circuitry is designed to allow a change in potential level to

cause latching or to cause unlatching of an electromechanical relay, with the change in potential level being amplified



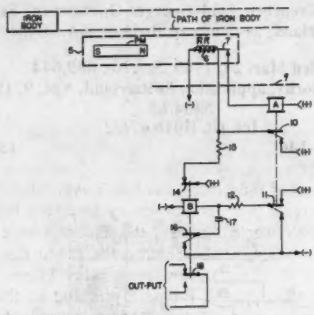
and supplied to the relay latching and unlatching circuit through a step-up transformer.

3,562,603

MAGNETIC REED PROXIMITY DETECTOR

Willis R. Smith, Rochester, N.Y., assignor to General Signal Corporation, Rochester, N.Y., a corporation of New York

Filed Oct. 30, 1968, Ser. No. 771,825
Int. Cl. H01h *47/00*; B61l *11/08, 13/04*
U.S. Cl. 317—157 7 Claims



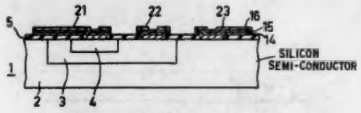
This device detects the proximity of magnetic objects, and comprises a permanent magnet associated with a spaced reed relay which has its contact normally held in an actuated position by the flux from the magnet. Such contact is released when flux from the magnet is diverted to a different path by the presence of a magnetic body; but restoration of normal flux from permanent magnet does not actuate the contact. A coil surrounding the reed relay contact is energized from a repeater relay when the reed contact is released. Thus, oscillation occurs during the detection of an object but stops during the absence of such object. Relay means is provided to be responsive to the steady state condition of the repeater relay, but to be unresponsive to an oscillatory condition. Such relay means, when responsive to the steady state of the reed relay contact, also provides a slight holding effect in addition to the normal flux from the permanent magnet to render the reed relay contact less responsive to the diversion of flux from the permanent magnet; but, when the reed relay contact is once released, such holding effect is removed so that the oscillatory condition is steadily maintained until the magnetic object is removed and the diversion of flux is stopped. This provides a positive acting and a sensitive proximity detector for relatively high speed operation.

3,562,604

SEMICONDUCTOR DEVICE PROVIDED WITH AN INSULATING LAYER OF SILICON OXIDE SUPPORTING A LAYER OF ALUMINUM

Karel Jakobus Block Van Laer, and Frans Victor Willem Ten Bloemendal, Mollenhutseweg, Nijmegen, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y., a corporation of Delaware. by mesne assignments

Filed May 8, 1968, Ser. No. 727,487
Claims priority, application Netherlands, May 18, 1967, 6706868
Int. Cl. H01l *3/00*
U.S. Cl. 317—234 7 Claims



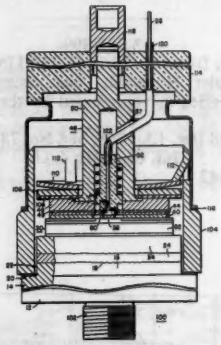
A semiconductor device comprising a semiconductor body containing an insulating layer of silicon oxide and on top of the silicon oxide a layer of aluminum, which may become rough or uneven when the device is subjected to a thermal treatment. To avoid the latter, the aluminum layer is covered with a titanium layer and a second aluminum layer on top of the titanium.

3,562,605

VOID-FREE PRESSURE ELECTRICAL CONTACT FOR SEMICONDUCTOR DEVICES AND METHOD OF MAKING THE SAME

Herbert E. Ferree, Greensburg, and Chang K. Chu, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa., a corporation of Pennsylvania

Filed Feb. 10, 1969, Ser. No. 797,931
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 5 Claims



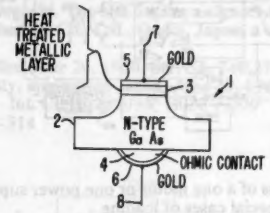
An electrically and thermally conductive partially deformable member is employed in a pressure electrical contact assembly to provide an intimate electrical and thermal contact relationship between the member and adjacent components in physical contact with it. The partially deformable member may be utilized between a pressure electrical contact to the semiconductor element and the element itself or between the backup electrode affixed to the element and the support member upon which the backup electrode is disposed. This intimate contact relationship improves the forward voltage drop characteristic of the device and distributes the force loading uniformly over the surfaces of the components to which it is in physical contact.

3,562,606

SUBSURFACE GALLIUM ARSENIDE SCHOTTKY-TYPE DIODE AND METHOD OF FABRICATING SAME

John Heer, West Newbury, and James A. Trinchera, Hamilton, Mass., assignors to Varian Associates, Palo Alto, Calif., a corporation of California

Filed Aug. 13, 1969, Ser. No. 849,751
Int. Cl. H01l 9/00, 7/36
U.S. Cl. 317—234 6 Claims



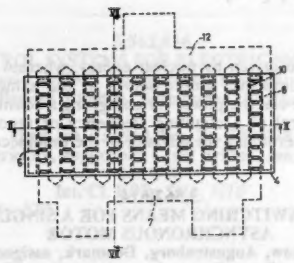
A Schottky-type diode is fabricated by depositing a metallic layer of an alloy of silver with zinc and indium on the surface of an n-type gallium arsenide wafer. The wafer is heat treated at 650° C. in a reducing atmosphere to form a subsurface junction displaying Schottky-type barrier characteristics and having improved stability.

3,562,607

OVERLAY-TYPE TRANSISTOR WITH BALLAST RESISTOR

Alfons Matthijs Reinier van Iersel, Mollenhutseweg, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y., a corporation of Delaware. by mesne assignments

Filed May 8, 1968, Ser. No. 727,562
Claims priority, application Netherlands, May 12, 1967, C 706641
Int. Cl. H01l 11/00
U.S. Cl. 317—235 6 Claims



An overlay type transistor with a ballast resistor to avoid hot spots is described. The resistor comprises a layer of resistance material on each emitter zone, and the emitter contacts comprise a conductive strip on each resistor and overlying the emitter zones whereby the resistance through the thickness of the resistance layer is utilized.

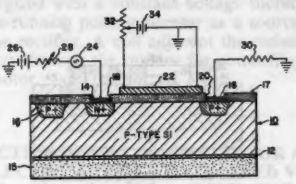
3,562,608

VARIABLE INTEGRATED COUPLER

Robert C. Gallagher, Normandy, and James R. Cricchi, Catonsville, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa., a corporation of Pennsylvania

Filed Mar. 24, 1969, Ser. No. 809,668
Int. Cl. H01l 11/14
U.S. Cl. 317—235 8 Claims

Described is an integrated circuit variable coupler utilizing metal oxide semiconductor (MOS) techniques, wherein the degree of coupling or capacitance of the coupler is a function of the size of the depletion region of a PN junction which can



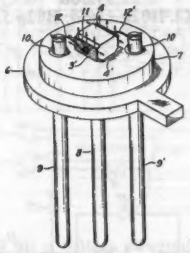
be varied by a voltage applied across a thin film resistor deposited on an oxide layer.

3,562,609

SOLID STATE LAMP UTILIZING EMISSION FROM EDGE OF A P-N JUNCTION

Arrigo Addamiano, Willoughby, and Lester M. Hertz, Euclid, Ohio, assignors to General Electric Company, a corporation of New York

Filed June 4, 1968, Ser. No. 734,303
Int. Cl. H01l 15/00
U.S. Cl. 317—235 5 Claims



The diffusion of P-type dopants into N-type silicon carbide in order to create junctions produces a surface layer of P-type material all over and around the silicon carbide platelet. By cutting the silicon carbide perpendicular to the plane of the platelet, PNP slices are obtained. When ohmic contacts are made to the opposite P-type layers and to the N-type core, light may be emitted edgewise from both junctions. The PNP double junctions can be connected for simultaneous operation on DC or for alternate operation on AC The N-type core is mounted on a header, and the edges of the P-type layers are recessed at the mounting surface so as to insulate the P-type layers from the header. In a method of making the lamp, a column of the N-type core, flanked by the P-type layers, is cut to form pairs of aligned transverse notches through the P-type layers, and the column is then severed at each pair of notches thus forming the aforesaid edge recesses of the P-type layers at the N-type core mounting surface.

3,562,610

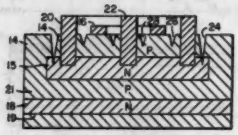
CONTROLLED RECTIFIER WITH IMPROVED SWITCHING CHARACTERISTICS

Thomas G. Stehney, Rillton, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of application Ser. No. 641,367, May 25, 1967, now abandoned. This application July 1, 1969, Ser. No. 841,689
Int. Cl. H01l 5/02
U.S. Cl. 317—235 1 Claim

This invention relates to a gate controlled PNPN semiconductor device having turnoff capability, and more particularly to a turnoff thyristor having both low current gain

characteristics and high reverse gate to cathode emitter voltage characteristics. In this device an emitter region is



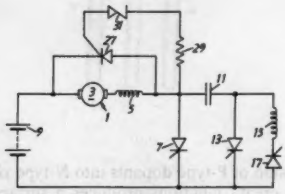
formed in a base region by diffusion and gate contacts are alloyed through the emitter region to the base region.

3,562,611

STATIC SWITCHING CONTROLLERS FOR EFFECTING REPETITIVE CONNECTION TO AND DISCONNECTION FROM AN INDUCTIVE LOAD OF A DC SOURCE

David Gurwicz, Gateshead, England, assignor to Sevcon Engineering Limited, Dunham, England

Filed May 5, 1969, Ser. No. 821,904
Claims priority, application Great Britain, May 13, 1968, 22,592/68
Int. Cl. H02k *23/08;* **H02p** *5/06*
U.S. Cl. 318—246 **10 Claims**



Static switching controller using a thyristor to connect a DC source to a load there being provided control means to render the thyristor conducting, a commutating capacitor adapted to be charged from the source and to reverse bias the thyristor to terminate conduction thereof and means for preventing decay of the charge on the capacitor to a level below that required to commutate the thyristor, there being further provided a unidirectional load shunting current path which in the interval between successive periods of conduction of the thyristor operates to permit charging of the capacitor to a relatively high voltage level.

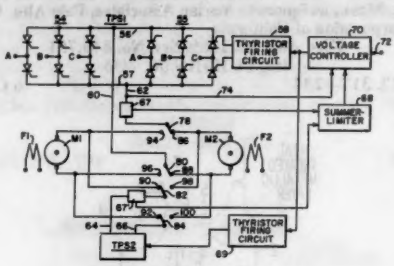
3,562,612

THYRISTOR POWERED REVERSIBLE DUAL MOTOR DRIVE WITH VOLTAGE AND CURRENT FEEDBACK

William A. Munson, Williamsville, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa., a corporation of Pennsylvania

Filed Oct. 21, 1968, Ser. No. 769,262
Int. Cl. H02p *1/58*
U.S. Cl. 318—106 **6 Claims**

Described is a thyristor power system for a pair of motors which drive a common shaft. Two power supplies, a motor controller, and an internal system of feedback networks are so arranged that the motors are automatically regulated to provide substantially equal load division. The arrangements also features adaptability of interconnection of two motors and two power supplies, in various mode to accommodate



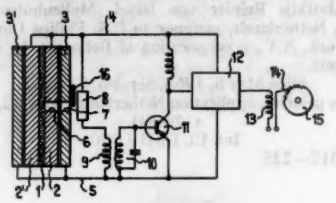
emergency loss of a one motor or one power supply, or to accommodate special cases of loading.

3,562,613

TIMEPIECE DRIVEN BY NUCLEAR ENERGY

Karl Adler, Grenchen, and Georges Ducommun, Feldbrunnen, Switzerland, assignors to Baumgartner Freres S.A., Solothurn, Switzerland

Filed Apr. 11, 1969, Ser. No. 815,356
Claims priority, application Switzerland, Apr. 17, 1968, 5,663
Int. Cl. H02k *33/00*
U.S. Cl. 318—130 **22 Claims**



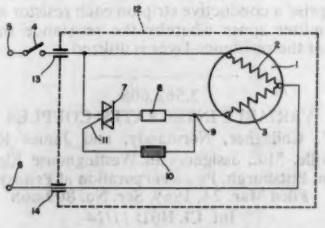
A timepiece driven by nuclear energy, wherein the radiation of a radioactive source serves at the same time for producing the electric power for energizing a counting circuit and for control of a counting frequency or recombination frequency determining the advance of the timepiece.

3,562,614

STARTING SWITCHING MEANS FOR A SINGLE-PHASE ASYNCHRONOUS MOTOR

Asger Gramkow, Augustenborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark, a corporation of Denmark

Filed July 10, 1968, Ser. No. 743,725
Int. Cl. H02p *1/44*
U.S. Cl. 318—221 **1 Claim**



The invention relates to starting switch means for a single phase asynchronous motor having a symmetrical controlled

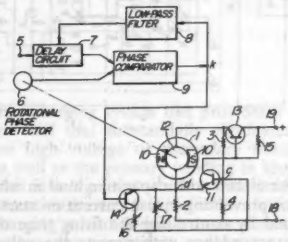
semiconductor valve as a starting switch. The valve and an ohmic resistor is in series with the starting winding of the motor. A PTC resistor is connected to the control electrode of the valve and is arranged parallel to the valve and the ohmic resistor. The starting switching means is enclosed, along with the electric motor, in the housing of a refrigeration unit.

3,562,615

PHASE CONTROL DEVICE FOR DC MOTOR

Takuya Nasu, Hirakata-shi; Osahiko Yano, Kadoma-shi, and Masahiro Deguchi, Yao-shi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan, a corporation of Japan

Filed June 26, 1968, Ser. No. 740,372
Claims priority, application Japan, June 29, 1967, 42/42229
Int. Cl. H02p 5/16; H03d 13/00
U.S. Cl. 318—314 **8 Claims**



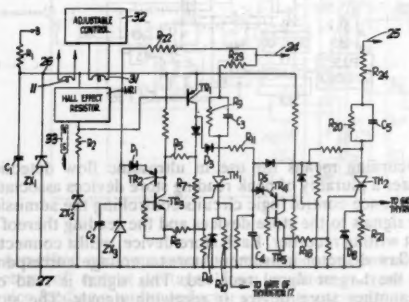
A device for controlling the rotation of a rotary shaft driven by a DC motor so that the rotary shaft can rotate with a rotational phase which is in synchronism with the phase of a predetermined signal. The device is provided with a speed regulator so that the motor can drive the rotary shaft at approximately the number of revolutions corresponding to the oscillation frequency of the predetermined signal, and a signal representative of the phase difference is applied to the speed regulator so as to positively and steadily drive the motor in phasic synchronism and eliminate the hunting while and after the motor is pulled in.

3,562,616

CONTROL SYSTEMS FOR ELECTRIC MOTORS

Royston David Elliott, Basingstoke, England, assignor to Lansing Bagnall Limited, Basingstoke, England, a British company

Filed Jan. 7, 1969, Ser. No. 789,478
Claims priority, application Great Britain, Jan. 9, 1968, 1304/68
Int. Cl. H02p 5/16, 5/18
U.S. Cl. 318—332 **4 Claims**



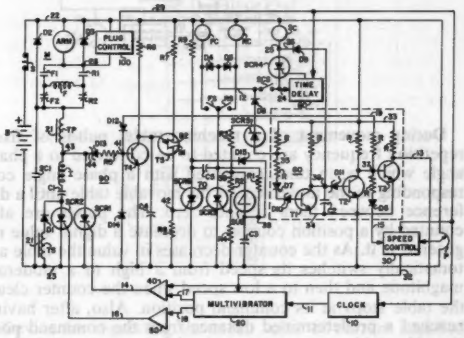
A motor drive circuit in which a direct current motor is fed with pulses of current by means of a controlled rectifier connected as a power switch between a power source and the motor. The conduction of the rectifier is controlled by a potential divider one element of which is a flux-responsive resistor adjacent a conductor of armature current. The divider is energized with a constant voltage thereby avoiding use of a free-running pulse generator as a source of trigger pulses for the rectifier. A coil adjacent the resistor provides additional flux through the resistor for controlling the pulse rate of the motor.

3,562,617

MALFUNCTION DETECTOR CIRCUIT FOR A SOLID STATE ELECTRIC MOTOR CONTROLLED VEHICLE

Roger D. Meier, Menominee Falls, and Philip H. Rusch, Wauwatosa, Wis., assignors to Square D Company, Park Ridge, Ill., a corporation of Michigan

Filed Apr. 4, 1969, Ser. No. 813,520
Int. Cl. H02h 7/09
U.S. Cl. 318—341 **10 Claims**



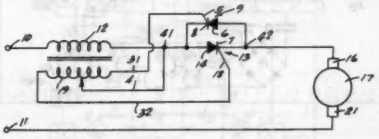
A control circuit for a battery powered vehicle including circuits for detecting the failure of a pair of contacts in a high-speed circuit to open, the failure of a silicon controlled rectifier which supplies current pulses to the traction motor to switch to a nonconductive state within a predetermined time interval and the failure of a silicon controlled rectifier in a circuit that controls the direction of rotation of the motor to block current flow through the direction controlling circuit. The circuit is arranged to interrupt or prevent energization of the traction motor when any of the above recited failures is detected.

3,562,618

TORQUE CONTROL CIRCUIT FOR ELECTRIC MOTORS

Athanase N. Tsergas, Des Plaines, Ill., assignor to Ram Tool Corporation, Chicago, Ill., a corporation of Illinois

Filed Nov. 3, 1967, Ser. No. 680,492
Int. Cl. H02p 5/06
U.S. Cl. 318—246 **2 Claims**

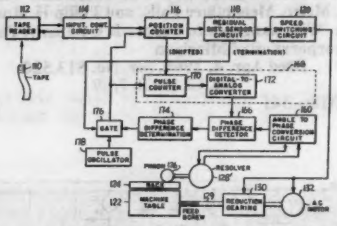


A torque control circuit wherein a silicon controlled rectifier is connected in series with the field and armature of an electric motor and is gated by a pickup winding which is magnetically coupled to the field of the motor such that the motor speed depends upon motor load current.

3,562,619
A CONTROL SYSTEM FOR SELECTIVELY POSITIONING AN OUTPUT MEMBER

Hisamoto Hyoguchi; Taka-aki Kanamori, and Yasutugu Kuroda, Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokoyo, Japan

Filed Dec. 18, 1968, Ser. No. 784,842
Claims priority, application Japan, Dec. 22, 1967, 42/82342
Int. Cl. G05b *1/06*
U.S. Cl. 318—603 4 Claims

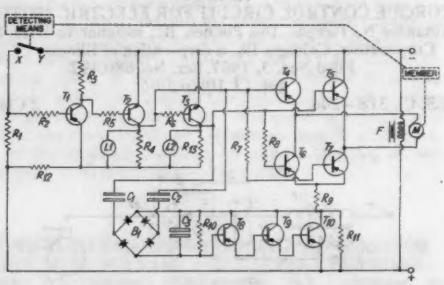


During movement of a machine table, pulses of fixed repetition frequency are counted to be converted to a phase angle which is, in turn, compared with a phase angle corresponding to the movement of the movable table until a difference between them reaches zero. The pulses are also counted by a position counter to decrease a digital value registered in it. As the counter decreases in value the table automatically switches its speed from a high to a moderate magnitude and then to a low speed when the counter clears the table stops at its command position. Also, after having reached a predetermined distance from the command position, the table can progressively decelerate in accordance with the value remaining in the counter.

3,562,620
CONTROL SYSTEM FOR OVERCOMING STICTION, FRICTION IN ELECTRIC MOTORS

Arthur K. Haslehurst, Northworthy, 11 Louvain Road, Derby, England

Filed Mar. 8, 1968, Ser. No. 711,802
Claims priority, application Great Britain, Mar. 11, 1967, 11,503/67
Int. Cl. G05f *1/08*
U.S. Cl. 318—616 12 Claims

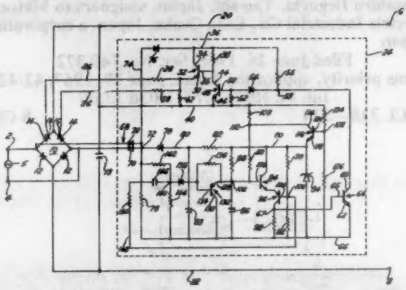


A positional control system comprises an electric motor, circuit means responsive to the position of the member to be controlled and operative to cause the motor to oscillate the member rapidly about the desired position, and damping means to limit the amplitude of the oscillation to an acceptable level.

3,562,621
INRUSH CURRENT LIMITING CIRCUIT FOR RECTIFIER CIRCUITS WITH CAPACITIVE LOAD

Johannes M. Schaefer, Wilton, Conn., assignor to Technipower Incorporated, South Norwalk, Conn., a corporation of Connecticut

Filed July 26, 1967, Ser. No. 656,277
Int. Cl. H02n *3/18*
U.S. Cl. 320—1 10 Claims

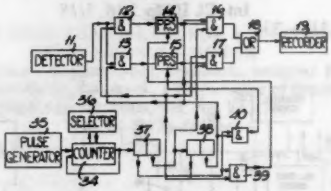


A rectifier circuit with capacitive load in which means are provided for preventing inrush current on start-up, this being accomplished by controlling the firing time of a controlled rectifier in accordance with sensing the voltage across the capacitive load; timing is achieved by appropriately varying the charging rate of a regulating capacitor which is periodically discharged; parameter regulating means is superimposed and is effective, once the parameter in question reaches a predetermined range, to take over control of the regulating capacitor charging rate and to thereafter modify that charging rate in order to maintain the parameter in question at a predetermined value.

3,562,622
ULTRASONIC FLAW DETECTION APPARATUS WITH DATA COMPRESSION SYSTEM

Douglas Aldridge-Cox, Four Oaks, England, assignor to S.T.D. Services Limited, Birmingham, England

Filed Mar. 1, 1968, Ser. No. 709,698
Claims priority, application Great Britain, Mar. 1, 1967, 9691/67
Int. Cl. H02n *1/00*
U.S. Cl. 320—1 3 Claims

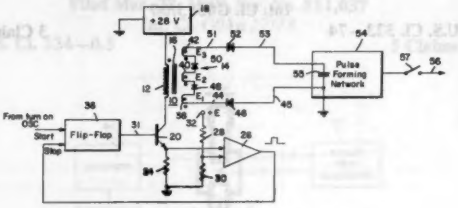


A recording means for use in ultrasonic flow detection comprises a plurality of peak reading store devices associated with sequence control logic circuits controlling the admission of flaw signals to the store devices and the reading thereof to a direct writing recorder. Each store device, whilst connected to the flaw detector instrument stores a voltage corresponding to the largest signal received. This signal is read out whilst another store device is receiving signals. The store devices each include a capacitor which is charged by incoming signals. Read out is effected through a field effect transistor, utilizing the high input impedance thereof to prevent excessive reduction of the charge on the capacitor during the readout period.

3,562,623
CIRCUIT FOR REDUCING STRAY CAPACITY EFFECTS IN TRANSFORMER WINDINGS

Robert P. Farnsworth, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif., a corporation of Delaware

Filed July 16, 1968, Ser. No. 745,245
Int. Cl. H02m 3/32
U.S. Cl. 321—2 7 Claims

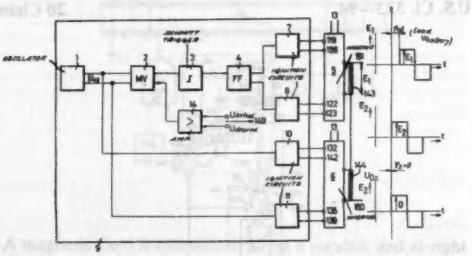


A transformer charging system that provides a highly efficient operation and that substantially eliminates switching transients. The high voltage or secondary winding of the transformer as well as the primary winding in some arrangements, is divided into segments which are isolated from each other by unidirectional current conductive devices such as diodes. For charging a load coupled to the secondary winding, current pulses are repetitively applied to the primary winding from the power source with the flyback voltage resulting from the pulse terminations causing current to flow through the diodes. The diodes allow the stray capacitance associated with each segment to initially charge but prevent them from discharging between the repetitive operations, which would cause additional flow of primary current and dissipation losses.

3,562,624
METHOD AND APPARATUS FOR INFLUENCING THE OUTPUT VOLTAGES OF CURRENT SUPPLY INSTALLATIONS

Werner Ullman; Franco Donati, Locarno, and Gianfranco Tortelli, Ascona, Switzerland, assignors to A.G. Fur Industrielle Elektronik Agie Losone B. Locarno, Losone-Locarno, Switzerland, a corporation of Switzerland

Filed Sept. 18, 1967, Ser. No. 668,619
Claims priority, application Switzerland, Sept. 27, 1966, 13960/66
Int. Cl. H02m 7/00
U.S. Cl. 321—5 15 Claims

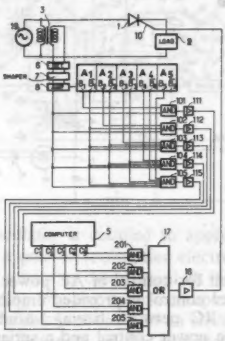


A method and apparatus for influencing or controlling the vectors of output voltages from a direct-current supply device feeding a multiconductor alternating-current transmission system. The total voltage vector for each conductor is generated from two partial voltage vectors. Control of the magnitude of the total voltage vector is effected by phase-shifting the partial voltage vectors, each partial voltage vector being phase-shifted through the same angular magnitude but in opposite angular direction. In this manner, the total voltage vector for each conductor is maintained in a constant phase position even during automatic regulation and in the presence of an asymmetrical load.

3,562,625
APPARATUS FOR CONTROLLING THE MEAN VALUE OF CURRENT SUPPLIED BY AN ALTERNATING CURRENT SOURCE TO AN ELECTRIC APPARATUS

Jean van den Broek D'Obrenan, Versailles, France, assignor to Compagnie Generale d'Automatisme, Paris, France, a corporation of France

Filed Oct. 11, 1967, Ser. No. 674,608
Claims priority, application France, Oct. 11, 1966, PV79,568
Int. Cl. H02m 1/08; H02p 13/16
U.S. Cl. 321—16 7 Claims

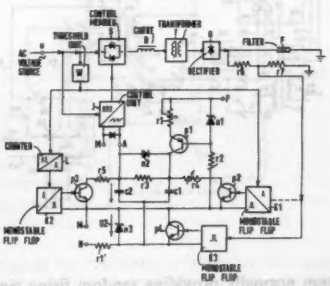


Device for regulating the mean value of current supplied by an AC current source to an electrical apparatus, dependent on data supplied by a computer, comprising a cycle counter having N binary flip-flops providing N binary signal combinations of a series of 2^N pulses and a control arrangement responsive to the computer for applying one of 2^N combinations of said N binary signals in control of the current supplied to said electrical apparatus.

3,562,626
CIRCUIT ARRANGEMENT FOR AUTOMATICALLY CONTROLLING THE VOLTAGE OF AN ELECTRICAL FILTER

Hans-Jurgen Morell, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Munich, Germany, a corporation of Germany

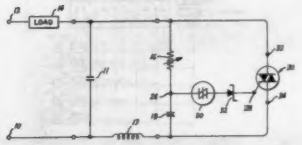
Filed May 2, 1969, Ser. No. 821,246
Claims priority, application Germany, May 9, 1968, P 17 57 439.9
Int. Cl. H02m 7/20
U.S. Cl. 321—18 3 Claims



A filter is coupled to an AC voltage source via a control member which is controlled in operation by a control circuit.

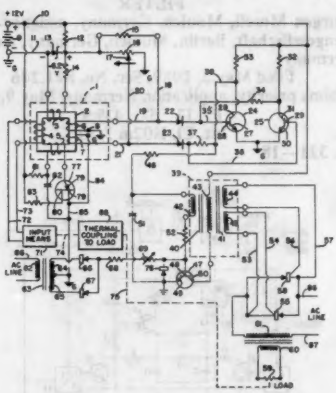
A switching component coupled to the control capacitor is connected to the control member via a counter which controls the conductivity condition of the switching component in a manner whereby the control capacitor is discharged only when the instantaneous magnitude of current flowing through the control member exceeds a response level within a specific interval between successive half waves of the AC source.

3,562,627
LOW HYSTERESIS FIRING CIRCUIT FOR SOLID STATE SWITCH
James H. Galloway, Cato, N.Y.; Frank W. Gutzwiller, Erie, Pa., and E. Keith Howell, Skaneateles, N.Y., assignors to General Electric Company, a corporation of New York
Filed Apr. 29, 1968, Ser. No. 724,748
Int. Cl. G05f *3/04*
U.S. Cl. 323—16 **4 Claims**



A firing circuit for control of AC power through a gated solid-state power control is provided employing a single series connected RC network having variable resistance in parallel with the power control and a series connected SBS and Zener diode to connect the junction of the RC network to the gate of the gated power control.

3,562,628
CIRCUIT FOR LIMITING THE FIRING OF A SILICON CONTROLLED RECTIFIER TO A LOW ANGLE OF THE INPUT ALTERNATING CURRENT
Alfred W. Barber, Bayside, N.Y. (32-44 Francis Lewis Blvd., Flushing, N.Y. 11358)
Filed June 10, 1968, Ser. No. 735,849
Int. Cl. G05f *1/44*
U.S. Cl. 323—22 **5 Claims**



In a system normally providing random firing signals to a pair of silicon controlled rectifiers, one for each phase of an alternating current source of power, in phase inhibiting pulses are applied to reduce the firing angle to a predetermined maximum.

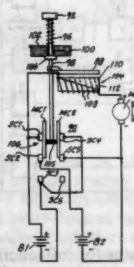
ERRATUM

For Class 323—74 see:
Patent No. 3,562,637

3,562,629
TUBE FILLED WITH IONIZED GAS FORMING A RESISTOR-CAPACITOR UNIT
Michel Troubetzkoi, 3660 Peel St, Montreal, Quebec, Canada
Filed Mar. 4, 1968, Ser. No. 710,176
Int. Cl. G05f *3/00*
U.S. Cl. 323—74 **3 Claims**

A capacitor unit for use as a tension reducer and consisting of a tube filled with ionizable gas and provided with electrodes at its two ends for connection to a source of high voltage, at least one of the electrodes being an external electrode so as to form one conductive surface of a condenser, the dielectric of the condenser being formed by the wall of the tube and the other conductive surface of the condenser being formed by the gas inside the tube when ionized, the ionized gas forming also a resistive path to the other electrode whereby the tension reducer forms at least one capacitor and one resistor element in series. The unit is more particularly adapted for use in combination with measuring instrument for measuring high voltage.

3,562,630
VARIABLE RESISTANCE MEANS FOR AN ELECTRICAL APPLIANCE
Richard A. Honkonen, Monroe; Paul E. Allen, Newtown; Richard K. Way, Monroe, and Carl M. Larime, Fairfield, Conn., assignors to Sperry Rand Corporation, New York, N.Y., a corporation of Delaware
Original application Sept. 14, 1964, Ser. No. 396,211, now Patent No. 3,437,282, dated Apr. 8, 1968. Divided and this application Apr. 26, 1968, Ser. No. 796,240
Int. Cl. G05f *3/08*
U.S. Cl. 323—94 **20 Claims**



A variable resistance and switch means for an electrical appliance including a rheostat and an actuator for said rheostat movable reciprocably in a linear path for varying power output of the appliance and the speed of an operating

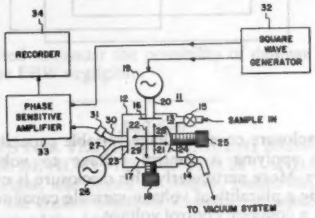
member through said rheostat and in accordance with the position of the actuator in the linear path of travel.

3,562,631

DUAL RESONANT CAVITY ABSORPTION CELL

Major C. Lee, Newport News, and William F. White, Hampton, Va., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Mar. 27, 1969, Ser. No. 811,037
Int. Cl. G01n 27/78
U.S. Cl. 324—0.5 5 Claims



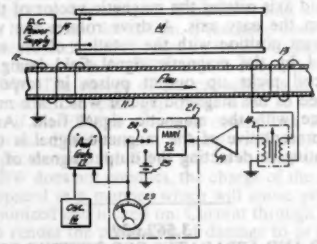
An absorption cell for holding a gas sample to be analyzed by microwave double resonance spectroscopy. A pair of Fabry-Perot interferometers are arranged in the cell so that their microwave fields propagate at right angles. One interferometer acts as a resonant cavity at the pumping frequency and the second as a resonant cavity at the observing frequency. Double resonance transitions occur in the volume common to both microwave fields.

3,562,632

NUCLEAR INDUCTION FLOW METER (UTILIZING PRINCIPLE OF NUCLEAR MAGNETIC RESONANCE)

James L. Kirkland, Panama City, Fla., assignor to the United States of America as represented by the Secretary of the Navy

Filed Apr. 25, 1969, Ser. No. 819,285
Int. Cl. G01n 27/00
U.S. Cl. 324—0.5 4 Claims



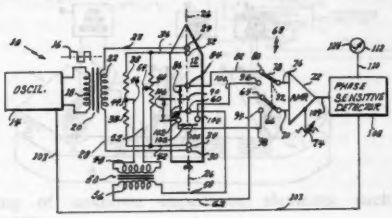
A magnetic field is established along a conduit and at right angles thereto. A fluid material flowing through the conduit has the atomic nuclei thereof excited for a brief interval by a magnetic field producing device external to the conduit. The excited nuclei precess about the axis of the magnetic field as the fluid moves through the conduit. At a point downstream from the point of excitation, the presences of the excited nuclei are detected by an electromagnetic transducer means also external to said conduit. The detected signal is amplified and delivered to appropriate circuitry to determine the flow rate of the fluid within said conduit.

3,562,633

TRANSMITTER AND RECEIVER ELECTRODE METHOD AND APPARATUS FOR SENSING PRESENCE AND PROXIMITY OF UNDERWATER OBSTRUCTIONS

William H. Swain, Sarasota, Fla., assignor to William H. Swain Company, Sarasota, Fla., fractional part interest to each and William J. Kreske, Newton Centre, Mass., fractional part interest to each

Filed Oct. 23, 1967, Ser. No. 677,126
Int. Cl. G01v 3/02
U.S. Cl. 324—1 50 Claims



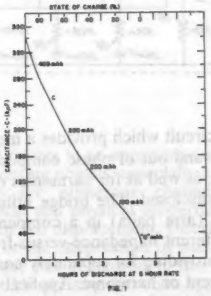
An electric oscillator is coupled to apply an alternating potential across a pair of transmitter electrodes protruding into water under a boat or other vessel, at least one receiver electrode protruding into the water is coupled to an amplifier, the output of which is coupled to an electric meter to indicate changes in potential of the receiver electrode with respect to a reference potential as an indication of obstruction changes surrounding the vessel, the particular obstruction indicated being determined by the arrangement of the receiver electrode with respect to the transmitter electrodes.

3,562,634

METHOD FOR DETERMINING THE STATE OF CHARGE OF NICKEL CADMIUM BATTERIES BY MEASURING THE FARAD CAPACITANCE THEREOF

Norman Latner, Jamaica, N.Y., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Dec. 16, 1968, Ser. No. 784,072
Int. Cl. H01m 31/04; G01n 27/02; G01r 31/00
U.S. Cl. 324—29.5 7 Claims



Method for predicting the capacity of nickel-cadmium batteries with a standard reference curve that indicates battery capacitance as a function of the state-of-charge of a given nickel-cadmium battery type wherein the standard reference

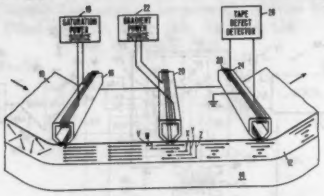
curve is used with the measurement of the capacitance of any battery of the given type to indicate the state-of-charge of the battery.

3,562,635

APPARATUS AND METHOD FOR DETECTING DEFECTS IN MAGNETIC TAPE

Gerald R. Parker, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y., a corporation of New York

Filed Oct. 16, 1968, Ser. No. 768,902
Int. Cl. G01r *33/12*
U.S. Cl. 324—34 **12 Claims**



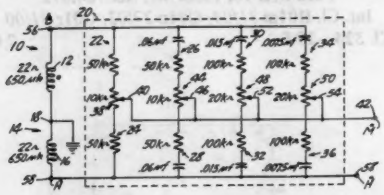
This invention detects tape defects down to and in the order of 10^{-5} inches in diameter or depth. This detection is achieved by recording DC test signals that do not saturate the tape, but instead provide a gradient of DC magnetization through the tape. The detection of very small or very shallow defects is further enhanced by use of an integrating amplifier in the fault-detecting circuit connected to the test read head. The output of the integrating amplifier is a signal which is very similar to the surface appearance of the tape.

3,562,636

BRIDGE CIRCUIT HAVING PLURAL COMPENSATING ARMS

John C. Huber, Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn., a corporation of Delaware

Filed May 20, 1969, Ser. No. 826,133
Int. Cl. G01r *33/00*
U.S. Cl. 324—34 **11 Claims**



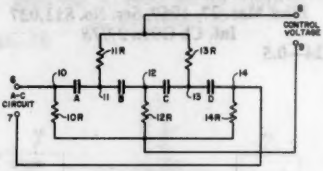
An AC bridge circuit which provides a means for compensating for both in and out of phase components of a fundamental frequency, as well as for harmonics of the fundamental frequency, is disclosed. The bridge utilizes a number of parallel branches (arm pairs) in a compensating leg, each branch having different impedance-versus-frequency characteristics thereby providing for separately compensating for a disparate component or harmonic. Applicable to systems for detection and measurement of a wide variety of electrical, magnetic and optical properties, the circuit is especially useful in conjunction with measurement of very weak magnetic materials, wherein the harmonics resulting from the primary excitation field are of comparable or greater magnitude than the signal generated as a result of exciting the magnetic material. The bridge circuit is shown in a system for displaying hysteresis loops of weakly magnetic materials.

3,562,637

LOW VOLTAGE DC CONTROL OF VOLTAGE-VARIABLE CAPACITORS

Emanuel Gikow, West Long Branch, N.J., assignor to the United States of America, as represented by the Secretary of the Army.

Filed July 7, 1969, Ser. No. 839,538
Int. Cl. H02m *5/08*; H02p *13/00*
U.S. Cl. 323—74 **3 Claims**



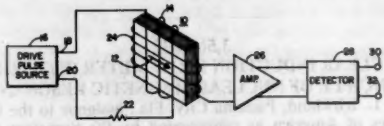
This disclosure covers voltage-variable capacitors, and circuits for applying a control voltage to voltage-variable capacitors. More particularly, this disclosure is of circuits for connecting a plurality of voltage-variable capacitors to be actuated by a common control voltage.

3,562,638

THIN FILM MAGNETOMETER USING MAGNETIC VECTOR ROTATION

Andre M. Renard, Penllyn, Pa., assignor to Honeywell Inc., Minneapolis, Minn., a corporation of Delaware

Filed Nov. 18, 1968, Ser. No. 776,623
Int. Cl. G01r *33/02*
U.S. Cl. 324—43 **2 Claims**



A thin magnetic film magnetometer is disclosed wherein the magnetometer has an easy axis drive component. The component of the ambient DC magnetic field in the direction of the hard axis rotates the magnetic vector of the thin film away from the easy axis. A drive rotates the vector away from its rest position with the rotation of the vector being modulated by the magnetic signal field being sensed. A sensing coil picks up output pulses in response to the disturbance of the magnetic vector which are modulated in accordance with the magnetic signal field. An electrical signal representative of the magnetic signal is obtained by demodulating or detecting the output signals of the sensing coil.

3,562,639

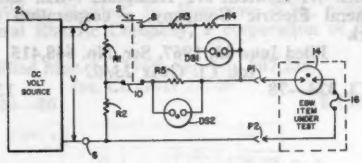
METHOD AND APPARATUS FOR TESTING EXPLODING BRIDGEWIRE ORDNANCE DEVICES

James B. Wright, and James D. Holder, Huntsville, Ala., assignors to the United States of America, as represented by the Secretary of the Army

Filed Jan. 9, 1969, Ser. No. 790,141
Int. Cl. G01r *31/02*
U.S. Cl. 324—51 **2 Claims**

A device and method wherein a first potential is applied to an exploding bridgewire unit (EBW), including a spark gap, to determine if the EBW is shorted. If the EBW is shorted, a lamp will be lighted. If the lamp is not lighted a second potential may be applied to the EBW to check continuity of the bridgewire of the EBW. The second potential is high enough to cause the spark gap of the EBW to break down

and conduct if continuity of the bridgewire exists. If the lamp does not light the EBW is defective. Current through the EBW is limited to render the possibility of damage to or explosion of the EBW negligible.

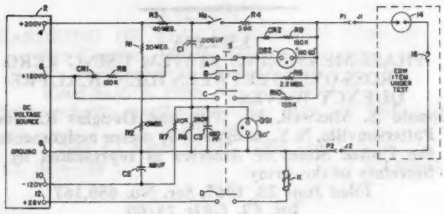


3,562,640

APPARATUS FOR TESTING EXPLODING BRIDGEWIRE ORDNANCE DEVICES FOR CONTINUITY AND SHORTS

James B. Wright, and James D. Holder, Huntsville, Ala., assignors to the United States of America, as represented by the Secretary of the Army

Filed Jan. 15, 1969, Ser. No. 791,416
Int. Cl. G01r *31/02*
U.S. Cl. 324—51 **3 Claims**



A device wherein a first potential is applied to an exploding bridgewire unit (EBW), including a spark gap, to determine if the EBW unit is shorted. If the EBW unit is shorted a lamp will be lighted and locked on. If the lamp does not light, a switch is depressed which causes a charged capacitor to be connected in series with the EBW unit to check the continuity of the EBW. The charge of the capacitor is of a voltage sufficient to cause the spark gap of the EBW to break down and conduct if the EBW is otherwise continuous. If conduction through the EBW occurs, a lamp connected in series with the capacitor and the EBW will be ionized and locked on. If the EBW does not conduct, the charge of the capacitor will be dissipated in a manner which will cause yet another lamp to be ionized and locked on. Current through the EBW is limited to render the possibility of damage to or explosion of the EBW negligible.

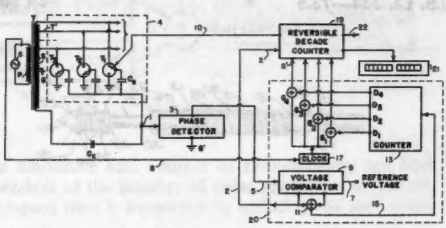
3,562,641

IMPEDANCE-MEASURING TRANSFORMER BRIDGE WITH AUTOMATIC DIGITAL BALANCING CIRCUIT

Robert G. Fulks, West Concord, Mass., assignor to General Radio Company, West Concord, Mass., a corporation of Massachusetts

Continuation of application Ser. No. 454,902, May 11, 1965. This application Nov. 25, 1968, Ser. No. 784,995
Int. Cl. G01n *27/00*
U.S. Cl. 324—57 **28 Claims**

The present invention relates to automatic electrical bridge-balancing circuits and, more particularly, to bridge circuits, preferably of the transformer bridge type, employing alternating-current digital servo controls for effecting rapid balancing of unknown impedance elements, such as capacitances.

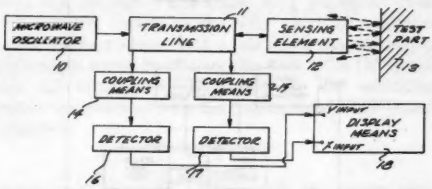


3,562,642

APPARATUS AND METHOD FOR MEASURING PROPERTIES OF MATERIALS BY SENSING SIGNALS RESPONSIVE TO BOTH AMPLITUDE AND PHASE CHANGES IN TRANSMITTED OR REFLECTED MICROWAVE ENERGY

Richard Hochschild, 2915 Pebble Drive, Corona Del Mar, Calif.

Continuation of application Ser. No. 390,616, Aug. 19, 1964, which is a continuation-in-part of application Ser. No. 373,283, June 8, 1964. This application Dec. 2, 1968, Ser. No. 781,704
Int. Cl. G01r *27/04*
U.S. Cl. 324—58.5 **14 Claims**



This invention relates to an apparatus and method utilizing microwaves for testing objects, especially nonmetalic objects, nondestructively for numerous characteristics such as thickness, chemical and physical properties, flaws, moisture content, vibration and displacement. Discrimination between these variables, or the suppression of one or more of these variables which are not of interest to the measurement, are shown to be possible utilizing detection apparatus which provides and displays two output signals, each of which is an independent function of the amplitude and phase of the microwave signal received from the test object. For example, different variables cause deflections in different directions in an XY display of the two independent output signals. Alternatively, means are described for obtaining a single output signal responsive to only one variable in the test object, or a single output signal in which the response to one test variable is suppressed.

3,562,643
SPRING LOADED TEST PROBE ASSEMBLY

James P. Smith, Woonsocket, R.I., assignor to Ostby & Barton Co., a corporation of Rhode Island

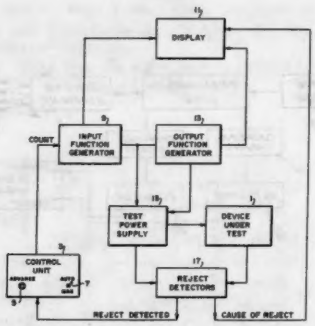
Filed Jan. 21, 1969, Ser. No. 792,336
Int. Cl. G01r 31/02
U.S. Cl. 324—72.5 4 Claims

A spring loaded contact assembly having a barrel for fitting into the opening in a test board with a terminal fixed to and extending from one end of the barrel and a plunger terminal slidable in the barrel and protruding from the opposite end. A spring acts between the fixed terminal and plunger terminal urging the latter outwardly of the barrel while the plunger terminal is arranged to have an axially deflectable tip for movement lateral of its axis under pressure and of such resilience that the tip of the plunger will move back into axial alignment with the plunger terminal when pressure thereon is released.

3,562,644
CIRCUIT TESTER PROVIDING CIRCUIT-SELECTED TEST PARAMETERS

Nicholas De Wolf, % Teradyne, Inc., 87 Summer St., Boston, Mass. 02110

Filed June 14, 1968, Ser. No. 737,141
Int. Cl. G01r 15/12
U.S. Cl. 324—73 18 Claims

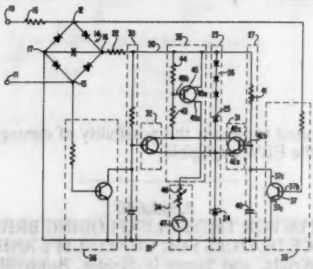


This application discloses a circuit tester particularly useful for digital integrated circuits and comprising a chassis, one or more family limit cards, and one or more device test cards. The family limit cards are each adapted to be detachably connected to the chassis, and each includes components selected to adapt the apparatus to test one of a family of circuits. The device test cards are each adapted to be connected to the chassis and to a particular circuit to be tested, and each includes components selected to adapt the apparatus to test the particular circuit. Means are provided for subjecting a circuit under test to a set of analog tests for each of a full set of digital input signals, and indicating improper responses to those tests. The full specification should be consulted for an understanding of the invention.

3,562,645
FREQUENCY TRANSDUCER UTILIZING PULSE GENERATOR PRODUCING FREQUENCY-RESPONSIVE, VARIABLE-WIDTH OUTPUT PULSES

Clarence W. Hewlett, Jr., Hampton, N.H., assignor to General Electric Company, a corporation of New York

Filed June 23, 1967, Ser. No. 648,415
Int. Cl. G01r 23/02
U.S. Cl. 324—78 13 Claims

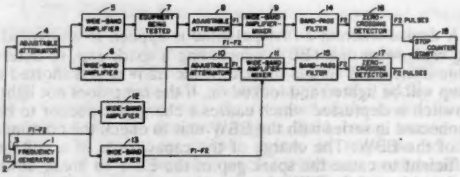


A frequency transducer adapted to be energized by an alternating current signal having means to produce frequency-indicating pulses the width of which varies in response to the measured frequency.

3,562,646
PHASE-MEASURING SYSTEM USING ZERO CROSS-OVERS BETWEEN IDENTICAL FREQUENCY WAVES

Donald E. Maxwell, De Witt, and Douglas R. Houst, Pattersonville, N.Y., assignors, by mesne assignments, to the United States of America as represented by the Secretary of the Army

Filed June 28, 1967, Ser. No. 650,167
Int. Cl. G01r 25/00
U.S. Cl. 324—85 3 Claims



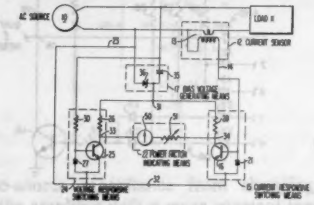
A wave generator provides a selected reference frequency wave. A second wave, frequency-locked to and separated from the reference frequency by a predetermined number of hertz, is also provided by the generator. The reference wave is passed through equipment for which a test of the phase-shift is desired. The phase-shifted reference wave is then mixed with the second wave to produce a third frequency wave. The unshifted reference and second waves are also mixed and produce the same third frequency wave. Each of the third waves is squared, then controls a circuit to produce short trigger pulses. These trigger pulses are used to start and stop a digital counter, with the count rate of the counter greater than the frequency of the third waves. The count as displayed by the counter is a measure of the phase-shift of the wave applied to the equipment being tested.

3,562,647

POWER FACTOR TRANSDUCER HAVING VOLTAGE AND CURRENT RESPONSIVE SWITCHING MEANS BIASED BY AN INTERMITTENTLY GENERATED VOLTAGE

Clarence Wilson Hewlett, Jr., Hampton, N.H., assignor to General Electric Company, a corporation of New York

Filed Mar. 14, 1969, Ser. No. 807,219
Int. Cl. G01r 25/00
U.S. Cl. 324—86 8 Claims



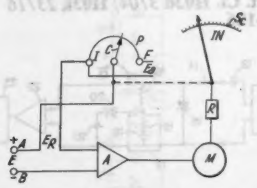
A power factor transducer. First and second switching means in a bridge circuit are closed during corresponding half cycles of line current and a power factor voltage, power factor voltage being in phase with line current at unity power factor. Line voltage energizes the bridge through a capacitor only during positive going power factor voltage half-cycles. Bridge imbalance, caused by non-simultaneous switching during non-unity power factor conditions indicates the power factor.

3,562,648

MEASURING OF ELECTROMOTIVE FORCES

Ugo Carpino, Milan, Italy, assignor to Pio Guardigli, Trivulzio, Italy

Filed Sept. 9, 1968, Ser. No. 758,513
Claims priority, application Italy, Sept. 19, 1967, 20,637/67
Int. Cl. G01r 17/06; G05f 7/00
U.S. Cl. 324—99 6 Claims



For measuring small direct-current electromotive forces a potentiometric instrument is used in which the direct-current voltage to be measured is compared with the direct-current output voltage of a magnetic balancing unit, said balancing unit being supplied in alternate-current and consisting of a four pole pieces stator with a primary input winding and four secondary output windings, one for each pole piece, and of a rotor, in which unit the output varies linearly with the angle of rotation of the rotor.

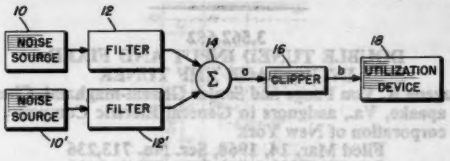
3,562,649

METHOD FOR REDUNDANT TIME MEASUREMENT

Eric J. Hoffman, Baltimore, Md., assignor, by mesne assignments, to the United States of America as represented by the Secretary of the Navy

Filed June 12, 1968, Ser. No. 736,432
Int. Cl. G04f 9/00
U.S. Cl. 324—181 6 Claims

A period of time is measured by generating a plurality of noise signals by means of a plurality of independent white Gaussian noise generators, by band-limiting each noise signal with suitable filters, by summing the noise signals emergent from said filters, and finally by amplitude-limiting the sum signal, thereby producing a signal whose amplitude and number of zero-crossings are both independent of the number of noise generators employed. The elapsed time is measured by counting the zero crossings.

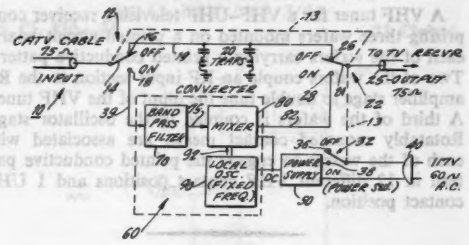


3,562,650

CATV SYSTEM WITH INCREASED CHANNEL CAPABILITIES

Thomas F. Gossard, Roselle, and Mutsuo Nakanishi, Maywood, Ill., assignors to Standard Kollsman Industries, Inc., Melrose Park, Ill., a corporation of Illinois

Filed Dec. 20, 1967, Ser. No. 692,231
Int. Cl. H04h 1/02, 7/10
U.S. Cl. 325—308 11 Claims



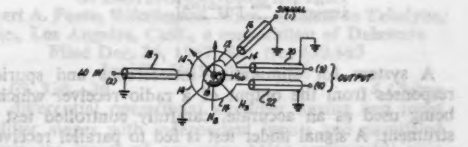
An arrangement for providing additional television channels and frequency converting such additional channels for selective tuning by the VHF tuner of a conventional television receiver. Such a television channel adding arrangement is shown in conjunction with a CATV System wherein the distribution cable provides the additional channels in conjunction with the conventional VHF broadcast channels.

3,562,651

MICROWAVE HYBRID JUNCTION CIRCUIT AND FREQUENCY TRANSLATORS CONSTRUCTED THEREFROM

John C. Hoover, Los Altos, and Stephen C. Volpone, Jr., Mount View, Calif., assignors to Watkins-Johnson Company, Palo Alto, Calif., a corporation of California

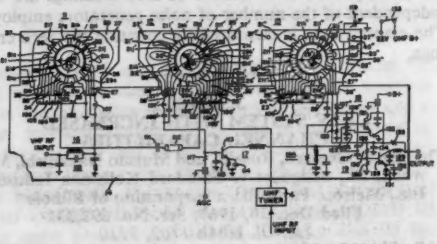
Filed May 27, 1968, Ser. No. 732,210
Int. Cl. H03d 7/02, 7/14
U.S. Cl. 325—446 7 Claims



A four port hybrid circuit for use at microwave frequencies having one input port with a tunable bandpass characteristic, and which splits signals out of phase to balanced output ports, and which has another input port

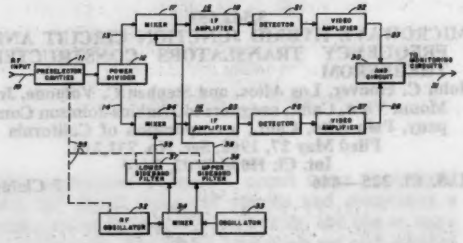
which directly couples inphase to the output ports. The input ports are isolated from each other. Novel frequency translating devices using the hybrid junction are also disclosed.

3,562,652
DOUBLE TUNED INPUT AND FIXED INTERSTAGE VHF TUNER
Eugene K. Von Fange and Sanjar Ghaem-maghami, Chesapeake, Va., assignors to General Electric Company, a corporation of New York
Filed Mar. 14, 1968, Ser. No. 713,236
Int. Cl. H03j 3/20, 5/24; H04b 1/16
U.S. Cl. 325—459 9 Claims



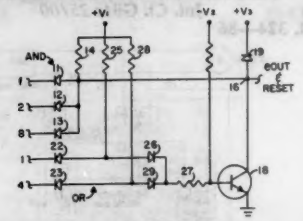
A VHF tuner for a VHF–UHF television receiver comprising three wafers mounted on a printed circuit board, each of the wafers carrying a printed conductive pattern. Two of the wafers couple an RF input section to the RF amplifier stage to double tune the input of the VHF tuner. A third of the wafers is coupled to the oscillator stage. Rotatably mounted contact means are associated with each of the wafers to engage the printed conductive pattern in 12 different VHF contact positions and 1 UHF contact position.

3,562,653
SPURIOUS RESPONSE FREE RECEIVER
Walter Simon, California, Md., assignor to the United States of America as represented by the Secretary of the Navy
Continuation of application Ser. No. 590,140, Oct. 26, 1966. This application May 20, 1969, Ser. No. 870,143
Int. Cl. H04b 1/12
U.S. Cl. 325—475 8 Claims



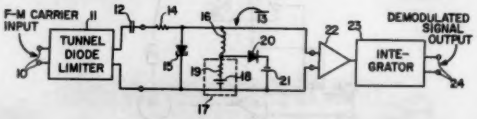
A system for eliminating interference and spurious responses from the output of a radio receiver which is being used as an accurate, carefully controlled test instrument. A signal under test is fed to parallel receivers, both receivers operating with the same local oscillator to produce outputs which are compared with an AND circuit. Matching signals must be presented to the AND circuit simultaneously in order for it to pass the test signal.

3,562,654
ELECTRONIC COUNTER
Paul L. Conant, Sr., Richardson, Tex., assignor to Collins Radio Company, Cedar Rapids, Iowa, a corporation of Iowa
Filed May 21, 1968, Ser. No. 730,720
Int. Cl. H03k 21/32
U.S. Cl. 328—48 4 Claims



An electronic counter including a plurality of serially connected flip-flops with the first flip-flop connected to receive a clock input signal and the output of each flip-flop providing the trigger input to the succeeding flip-flop. Outputs of selected flip-flops, in accordance with a desired count ratio, are connected to the inputs of an AND gate, and the output of the AND gate is connected to the counter output terminal. All other flip-flop outputs are connected to the inputs to an OR gate with the output of the OR gate operatively connected to switch means for clamping off the counter output terminal.

3,562,655
TUNNEL DIODE-HOT CARRIER DIODE MONOSTABLE CIRCUIT
Olav Peterson, Ottawa, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada
Filed Mar. 24, 1969, Ser. No. 809,634
Int. Cl. H03d 3/04; H03k 23/16
U.S. Cl. 329—126 2 Claims

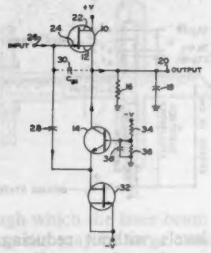


A tunnel diode monostable circuit having improved trigger sensitivity which is achieved by biasing a nonlinear load. The key element in the load is a hot carrier diode which is forward biased just below the knee of its characteristic when the circuit is in its quiescent state.

3,562,656
HYBRID SOURCE FOLLOWER AMPLIFIER
Glenn Bateman, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg., a corporation of Oregon
Filed Apr. 25, 1969, Ser. No. 819,360
Int. Cl. H03f 3/16, 5/00
U.S. Cl. 330—3 8 Claims

A hybrid source follower amplifier is described including a field effect transistor having its source electrode connected to a capacitive load and to the collector of a bipolar transistor and having its gate electrode connected through a "feed-forward" capacitor to the emitter of such bipolar transistor. The feed-forward capacitor is equal to the load capacitance and transmits high frequency input signals from the input to the output of the amplifier through the bipolar transistor along a path

which bypasses the internal gate-to-source capacitance of the field effect transistor. This increases the high frequency response and tends to keep the voltage across



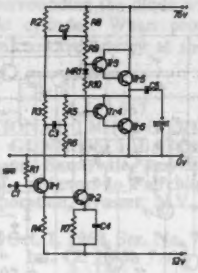
the gate-to-source capacitance from changing, thereby providing the amplifier with a more constant input capacitance as well as preventing the appearance of a negative input resistance.

3,562,657
PARAMETRIC AMPLIFIER CIRCUIT FOR MICROWAVE FREQUENCIES
Karl-Heinz Löcherer, Ulm (Danube), and Robert Maurer, Neureut, near Karlsruhe, Germany, assignors to Telefunken Patentverwertungsgesellschaft m.b.H., Ulm (Danube), Germany
Filed May 29, 1969, Ser. No. 828,898
Claims priority, application Germany, June 1, 1968, P 17 66 501.9
Int. Cl. H03f 7/04
U.S. Cl. 330—4.9 8 Claims

A nonreciprocal parametric microwave frequency amplifier circuit composed of two mixer cascade amplifiers connected in series and presenting simultaneous power and noise matching by an appropriate selection of the electrical values of the circuit.

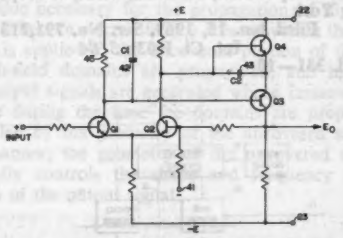
3,562,658
POWER AMPLIFIERS WITH COMPLEMENTARY PAIR DRIVER STAGES
John Dunn Collinson, Otley, Yorkshire, England, assignor to The Rank Organisation Limited, London, England, a British company
Filed Apr. 1, 1969, Ser. No. 811,919
Claims priority, application Great Britain, Mar. 29, 1968, 15,112/68
Int. Cl. H03f 3/18
U.S. Cl. 330—17 9 Claims

A transistor amplifier of which the output stage has two transistors driven by Darlington coupled driver transistors which receive their inputs from a current limiting stage and including a second stage supplying the input of the



first stage and having an output impedance which is less than the first stage input impedance.

3,562,659
WIDE BAND TRANSISTOR AMPLIFIERS WITH REDUCTION IN NUMBER OF AMPLIFYING STAGES AT HIGHER FREQUENCIES
William C. Kulas, Woburn, Mass., assignor to Krohn-Hite Corporation, Cambridge, Mass.
Filed Nov. 29, 1968, Ser. No. 779,771
Int. Cl. H03f 1/08, 3/04
U.S. Cl. 330—21 11 Claims

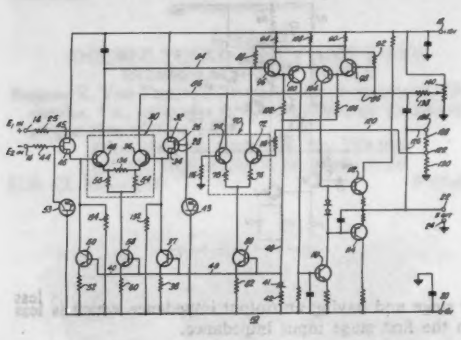


A wide band relatively high power low distortion stable signal generator is operative over the frequency range 10 Hz. to 10 mHz. The system includes a number of amplifying stages that provide multiple stage amplification at low frequencies and single stage amplification effectively at the higher frequencies to help prevent undesired oscillation. Nonlinear feedback techniques are employed to maintain AVC stability. Feedback from the output stage is derived so that the output stage emitter resistors form a portion of the 50 ohm output impedance. A novel ladder attenuating network provides precision attenuation while presenting the same 50 ohm impedance at all attenuation levels over the frequency range.

3,562,660
OPERATIONAL AMPLIFIER
Robert A. Pease, Wilmington, Mass., assignor to Teledyne, Inc., Los Angeles, Calif., a corporation of Delaware
Filed Dec. 26, 1967, Ser. No. 693,603
Int. Cl. H03f 3/04, 3/68
U.S. Cl. 330—30 4 Claims

A differential operational amplifier having two input amplifier stages with independent inputs and paralleled outputs, the inputs of one stage being connectable to a low level, high impedance source, the input or inputs of the other stage being connectable to negative feedback resistors for adjusting the closed loop gain of the amplifier. The respective outputs of the stages are applied in parallel to a differential-to-single-ended amplifier stage.

By making each input amplifier stage with high common mode rejection ability, common mode errors are eliminated at the front end of the amplifier. By matching the



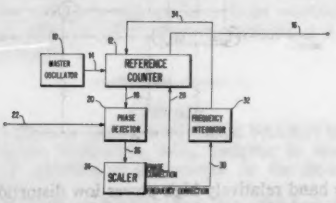
characteristics of these stages, overall gain is adjustable without introducing common mode errors or affecting the signal source.

3,562,661

DIGITAL AUTOMATIC PHASE AND FREQUENCY CONTROL SYSTEM

Dana F. Crumb, Lyons, and Robert F. Heldecker, Longmont, Colo., assignors to International Business Machines Corporation, Armonk, N.Y., a corporation of New York

Filed Jan. 15, 1969, Ser. No. 791,213
Int. Cl. H03b 3/04
U.S. Cl. 331—10 9 Claims



A phase lock loop which utilizes all digital circuits. The primary object is to synchronize the output of a clock oscillator of a synchronous data receiver with an incoming train of data pulses and more particularly to track tape velocity variations in magnetic recording systems and to produce reference clock pulses in proportion to that tape velocity. The loop consists of five basic parts: (1) the reference counter, (2) the master oscillator, (3) the phase detector, (4) the scaler, and (5) the frequency integrator. The response of this all digital phase lock loop to the input signal can simulate that of a conventional first, second, or third order analog phase lock loop.

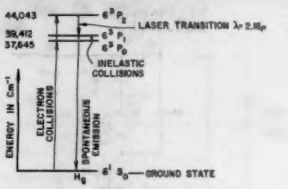
3,562,662

LASER UTILIZING COLLISION DEPOPULATION

Gordon Gould, New York, N.Y., and William Ralph Bennett, Jr., New Haven, Conn., assignors, by mesne assignments, to Gordon Gould, New York, N.Y.

Original application Jan. 18, 1965, Ser. No. 426,082. Divided and this application Feb. 1, 1966, Ser. No. 524,210
Int. Cl. H01s 3/02, 3/14, 3/22
U.S. Cl. 331—94.5 7 Claims

In lasers according to the present invention a judicious combination of inelastic electron-atom and atom-atom collisions for excitation and relaxation maintains a population inversion for atoms of the laser medium without reliance on spontaneous emission. This is possible because transfer rates between levels due to atom-atom collisions are small if the energy defect substantially exceeds the average kinetic energy. Thus collisions with other atoms can selectively relax the lower level to



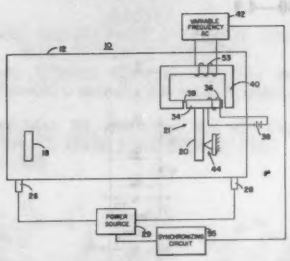
other nearby levels without reducing the upper level population. Since there is no reliance on spontaneous emission, operation in the lower region of the energy level structure is possible with inherently greater efficiency. Laser power of the order 1 watt/cm.³ with an efficiency greater than 10% is realizable.

3,562,663

MODE AND "Q" SWITCH MECHANISM FOR GASEOUS LASERS

Charles M. Cason III, Guilford J. Hutcheson, Jr., Thomas A. Barr, Jr., and Ethel R. Hasty, Huntsville, Ala., assignors to the United States of America as represented by the Secretary of the Army

Filed Dec. 29, 1967, Ser. No. 694,434
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 5 Claims



A gaseous laser including a cell enclosing a cavity having gases therein disposed for excitation for inversion of the population levels to provide stimulated emission. A mirror mounted at one end of the laser cell is disposed to reflect the stimulated emission to a partially transmitting second mirror at the other end of the cell for emission of the radiation of the cell. The first mirror is mounted for pivotal movement about its center (by about 10′ to 20′ of arc) to spoil the laser cavity optical alignment. The mirror motion is controlled by an electronically variable magnetic field to provide for high peak pulse power at about the average power level of continuous wave operation.

3,562,664

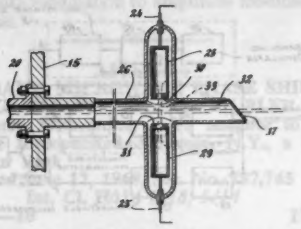
GAS LASER WITH MEANS FOR MAINTAINING POWER OUTPUT

Jameson D. Ridgen, 14 Clover Lane, Westport, Conn. 06880, and David A. Huchital, 41 Wolfpit Ave., Norwalk, Conn. 06851

Filed Mar. 1, 1968, Ser. No. 709,627
Int. Cl. H01j 61/00; H01s 3/22
U.S. Cl. 331—94.5 14 Claims

A gas laser including means for flowing the gas through an optical cavity and means for establishing a discharge within the gas to produce stimulated emission. An auxiliary potential difference is established in the gas enclos-

ure but outside the primary discharge region to prevent the accumulation of absorbing or scattering particles on



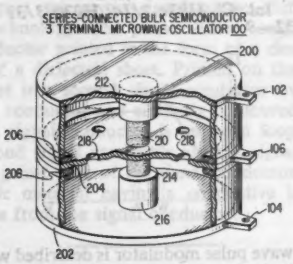
the windows through which the laser beam is transmitted. The potential difference may be large enough to produce a discharge.

3,562,665

MICROWAVE OSCILLATOR INCLUDING TWO BULK NEGATIVE RESISTANCE DEVICES IN A THREE-TERMINAL CAVITY

Robert Dean Larrabee, Princeton, N.J., assignor to RCA Corporation, a corporation of Delaware

Filed May 20, 1969, Ser. No. 826,163
Int. Cl. H03b 7/14
U.S. Cl. 331—96 **8 Claims**



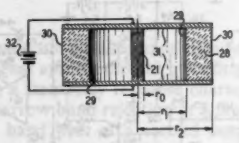
By employing a microwave resonant cavity structure composed of two mirror-image portions with respect to a plane of symmetry and conductive means situated in the plane of symmetry, where the conductive means has at least one aperture therein for coupling RF energy between the two portions, dissimilar bulk semiconductor negative differential resistance devices may be connected in series with each other without affecting the behavior of the cavity at the RF frequency.

3,562,666

SELF-RESONANT LSA MICROWAVE OSCILLATOR DEVICES

Daniel L. Rode, Murray Hill, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J., a corporation of New York

Filed June 23, 1969, Ser. No. 835,434
Int. Cl. H03b 7/14
U.S. Cl. 331—96 **7 Claims**



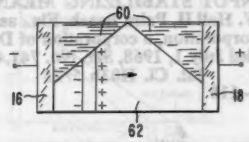
A cylindrical bulk-effect diode of appropriate doping and diameter is self-resonant at the LSA frequency, thereby eliminating the need for the normally required external resonator of an LSA oscillator. If the diode is gallium arsenide, the product of frequency and diameter should be 2.2×10^9 cm./sec. and the ratio of doping to frequency should be 5.4×10^4 sec./cm.^{3}. These values can be adjusted by surrounding the diode with an appropriate hollow dielectric cylinder. When properly biased, the diode radiates microwave energy at the LSA frequency.

3,562,667

FUNCTIONAL LIGHT-CONTROLLED GUNN OSCILLATOR

Raymond Solomon, Sunnyvale, and William H. Haydl, Tarzana, Calif., assignors to Fairchild Camera and Instrument Corporation, Syosset, N.Y., a corporation of Delaware

Filed Oct. 1, 1968, Ser. No. 764,148
Int. Cl. H03b 7/06
U.S. Cl. 331—107 **13 Claims**



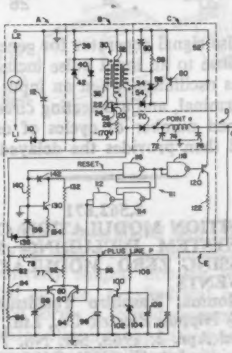
A shaped mask overlies a selected surface of a layer of light-sensitive semiconductor material capable of exhibiting negative mobility. The layer is formed so that the product of electron concentration therein times the length of path between spaced electrodes thereon is less than a value necessary for the propagation of high-field domains. When an electric field is created within the layer and light is applied to the uncovered portion of the surface, high-field domains are propagated, and high-frequency output signals are generated whose instantaneous amplitude during the time the domains are propagated is controlled by the geometry of the uncovered surface. In this manner, the geometry of the uncovered surface substantially controls the shape and frequency of the waveform of the output signal.

3,562,668

VARIABLE LOAD CONTROLLED BLOCKING OSCILLATOR POWER CONVERTER

Peter G. Bartlett, Davenport, Iowa, and Garland E. Fieser, East Moline, Ill., assignors, by mesne assignments, to Gulf + Western Industries, New York, N.Y., a corporation of Delaware

Filed July 18, 1968, Ser. No. 749,559
Int. Cl. H03b 3/14; H03k 3/30
U.S. Cl. 331—109 **8 Claims**



There is provided a high power, current limited, voltage regulated power converter suitable for printed circuit board mounting. A normally clamped oscillator operates

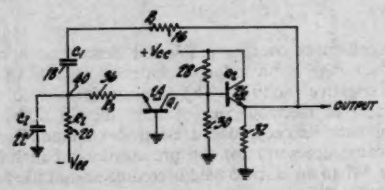
as a high frequency switching circuit and it is controlled by an actuatable oscillator control circuit. The operating frequency of the oscillator is controlled so as to provide a DC output level which is maintained at a predetermined level. Under a clamped condition, usually at no load, the frequency required to give this level is the lower operating frequency limit. A comparison circuit continuously compares the DC output voltage with a predetermined level set by reference setting circuit. Should the DC output voltage start to fall below the predetermined level, a voltage signal is produced by the comparison circuit. This voltage signal is directed to the oscillator control circuit to unclamp the oscillator to oscillate at a frequency necessary to restore the output voltage to the predetermined voltage level.

3,562,669

FEEDBACK TYPE OSCILLATOR WITH INPUT STABILIZING MEANS

David W. Hall II, Palm Beach, Fla., assignor to RCA Corporation, a corporation of Delaware

Filed July 1, 1968, Ser. No. 741,478
Int. Cl. H03b 5/26
U.S. Cl. 331—110 6 Claims



A feedback type oscillator has an amplifier with negligible A-C input impedance and is provided with an external input impedance to make the frequency of oscillation predictable.

3,562,670

DELAYED PULSE SIGNAL GENERATOR

Kozo Uchida, Tokyo, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan, a corporation of Japan

Filed May 8, 1969, Ser. No. 823,101
Claims priority, application Japan, May 28, 1968, 43/36,162
Int. Cl. H03k 17/28
U.S. Cl. 331—173 6 Claims

A delay pulse signal generator for generating a delayed pulse in response to an input pulse includes an oscillator which initiates oscillation when an input pulse is applied to its input terminal, and a detecting circuit which detects a predetermined number of cycles of oscillation of the oscillator and then provides the delayed pulse.

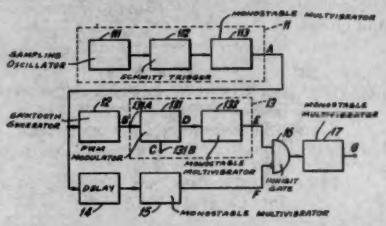
3,562,671

PULSE POSITION MODULATION COMMUNICATIONS SYSTEM INCLUDING MEANS FOR SUPPRESSING ZERO-MODULATION SIGNAL COMPONENTS

Takamichi Honma, Yasuhiro Toshitsuna, and Saburo Aoki, all % Nippon Electric Co., Ltd., Tokyo, Japan

Filed Apr. 2, 1968, Ser. No. 718,146
Int. Cl. H03k 7/04
U.S. Cl. 332—9 10 Claims

An improved pulse position modulator is described wherein selected pulses ordinarily representative of the zero signal level of the information to be transmitted are deleted. Deletion is accomplished by generating a pulse position modulated signal representative of the information signal and having a preselected pulse repetition rate,



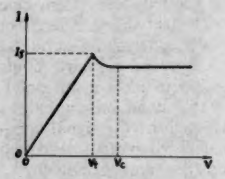
with selected portions of the pulses therefrom deleted by use of another pulse train of the same repetition rate but delayed in time by an amount corresponding to the position of the pulse to be deleted.

3,562,672

MICROWAVE PULSE-MODULATING DEVICE

Shigetoki Sugimoto and Tadahiko Sugiura, Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo-to Japan

Filed Oct. 15, 1968, Ser. No. 767,651
Claims priority, application Japan, Nov. 21, 1967, 42/74,898
Int. Cl. H03c 1/14; H03k 3/31
U.S. Cl. 332—9 1 Claim



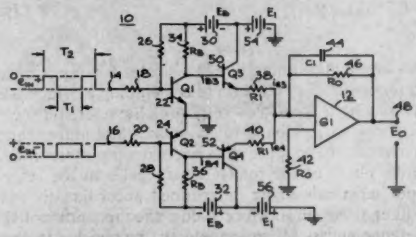
A microwave pulse modulator is described which utilizes a Gunn diode in electromagnetic variable attenuation relationship with a source of microwave energy and which is biased by a modulation voltage which varies between a maximum and a minimum value with the maximum level being chosen larger than the threshold voltage of the diode and the minimum level being chosen below the threshold level.

3,562,673

PULSE WIDTH MODULATION TO AMPLITUDE MODULATION CONVERSION CIRCUIT WHICH MINIMIZES THE EFFECTS OF AGING AND TEMPERATURE DRIFT

Frederick W. Caspari, South Bend, Ind., assignor, by mesne assignments, to Allen-Bradley Company, Milwaukee, Wis., a corporation of Wisconsin

Filed Aug. 16, 1968, Ser. No. 763,479
Int. Cl. H03k 7/10
U.S. Cl. 332—31 10 Claims



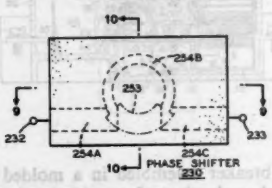
The adverse effects on the operation of a pulse width modulation to amplitude modulation conversion circuit

caused by noise signals and changes in temperature are considerably minimized by the insertion of circuitry, in accordance with this invention, into the driving circuit of said pulse width modulation to amplitude modulation conversion circuit.

3,562,674
BROADBAND MICROWAVE PHASE SHIFTER UTILIZING STRIPLINE COUPLER

Carl W. Gerst, Skaneateles, N.Y., assignor to Anaren Microwave Incorporated, Syracuse, N.Y., a corporation of New York

Filed June 17, 1968, Ser. No. 737,745
Int. Cl. H01p 1/18, 5/14
U.S. Cl. 333—10 11 Claims

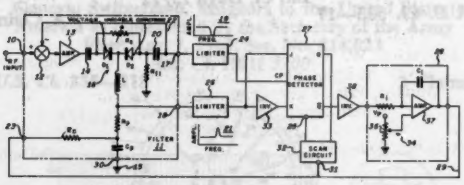


A two-port microwave-signal phase shifter utilizes stripline technology. The phase shifter comprises a first signal conductor printed in the form of a closed loop on one side of a dielectric sheet. Printed on the other side of the sheet is a second signal conductor overlying the first signal conductor and similarly contoured. However, the second signal conductor is an open loop. The ends of the second signal conductor are the signal terminals. Disposed against each of the signal conductors is a sheet of dielectric material having a conductive layer on its face remote from the signal conductor.

3,562,675
AUTOMATIC TUNED INTERFERENCE SIGNAL REJECTION FILTER INCLUDING DRIFT COMPENSATION MEANS

William J. Urell, Norwalk, Conn., assignor to Sperry Rand Corporation, a corporation of Delaware

Filed May 16, 1969, Ser. No. 825,363
Int. Cl. H03g 5/28
U.S. Cl. 333—17 19 Claims

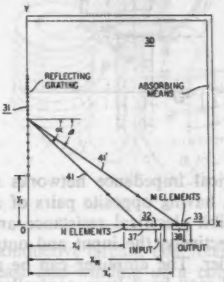


An automatic tuning filter apparatus for rejecting an interference signal applied thereto including a bridged-T network having a frequency response characteristic such that it provides narrow band rejection at a first output terminal and narrow band pass at a second output terminal, the relative phase of the interference signals at the respective output terminals being determined according to whether the filter is tuned above or below the frequency of the interference signal. A phase detector responsive to the output signals drives an integrator to produce a control signal for adjusting the capacitance of varactor diodes incorporated in the filter so as to tune the filter to the interference frequency.

3,562,676
FOLDED PATH PERPENDICULAR DIFFRACTION DELAY LINE

Marsena R. Parker, Jr., Matawan, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J., a corporation of New York

Filed Dec. 18, 1967, Ser. No. 691,304
Int. Cl. H03h 7/30
U.S. Cl. 333—30 7 Claims

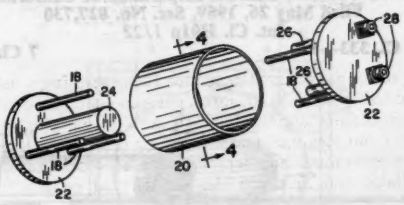


An intermediary graded grating is positioned in the beam path between the input and output graded gratings usually found in a perpendicular diffraction delay line. The intermediary grating intercepts the beams and redirects desired orders of them to the output grating at angles different from their angles of incidence without loss of the inherent averaging properties of the perpendicular diffraction delay line. The intermediary grating may be either reflecting or transmitting.

3,562,677
CYLINDRICAL BAND-PASS INTERDIGITAL AND COMB-LINE FILTERS

Leslie C. Gunderson, Raleigh, N.C., assignor to Corning Glass Works, Corning, N.Y., a corporation of New York

Filed Nov. 22, 1968, Ser. No. 778,201
Int. Cl. H03h 7/10
U.S. Cl. 333—73 9 Claims



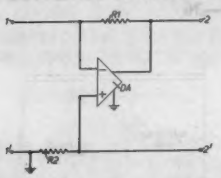
Cylindrically shaped interdigital and comb-line band-pass filters for VHF and UHF communications systems having a cylindrically shaped housing which forms a first equipotential surface, a cylindrical member within the housing which forms a second equipotential surface, and plural resonator elements capacitively coupled to one another and arcurately distributed within the housing between the two equipotential surfaces. The filter structure is compact and has greater volumetric efficiency than conventional interdigital filters having the same frequency range and band-pass.

3,562,678

ELECTRICAL IMPEDANCE NETWORKS

Andreas Antoniou, Hounslow, England, assignor to Her Majesty's Postmaster General, London, England

Filed Apr. 30, 1968, Ser. No. 725,416
Claims priority, application Great Britain, May 4, 1967, 20,882/67
Int. Cl. H03h 7/44
U.S. Cl. 333—80 13 Claims



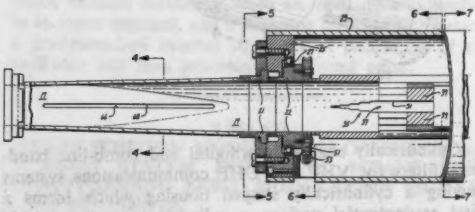
Two port electrical impedance networks in the form of a bridge circuit having opposite pairs of arms, a first pair of which exhibit electrical resistance and the other pair forming, respectively, the input and output ports of a high gain amplifier. The amplifier can be a voltage or current source and may be voltage controlled or current controlled. Negative impedance inverters and gyrators are described which use operational amplifiers, i.e. voltage controlled voltage sources having, ideally, infinite input impedance and zero output impedance. In the negative impedance inverters, the first pair of arms of the bridge both exhibit positive electrical resistance and in the gyrators one arm of the first pair of arms exhibits negative resistance (e.g. by use of a negative impedance converter) and the other exhibits positive resistance. The use of the gyrators to convert an inductance into a capacitance and to convert a capacitance into an inductance is described and direct-coupled gyrators having varying quality and bandwidth can be produced using commercially available integrated circuits.

3,562,679

ROTARY WAVEGUIDE ATTENUATOR HAVING ENERGY ABSORBING SLOTS

Franklin S. Coale, Pasadena, and William L. Wallick, Van Nuys, Calif., assignors to Systron-Donner Corporation, Concord, Calif., a corporation of California

Filed May 26, 1969, Ser. No. 827,730
Int. Cl. H01p 1/22
U.S. Cl. 333—81 7 Claims



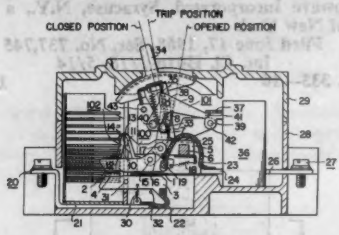
Rotary-type variable waveguide attenuator using current interrupting slots in a circular waveguide section which is rotatable with respect to the microwave field orientation and currents carried by the section. Lossy parallel plate transmission lines are coupled to the slots.

3,562,680

CIRCUIT BREAKER

Ryoji Ozaki, Kunio Igarashi, and Kiyoshi Kandatsu, Kawasaki-shi, Kanagawa-ken, Japan, assignors to Fuji Denki Seizo Kabushiki Kaisha, Kanagawa-ken, Japan

Filed Sept. 17, 1969, Ser. No. 858,768
Int. Cl. H01h 77/10
U.S. Cl. 335—16 8 Claims



The circuit breaker assembled in a molded casing includes for each pole thereof two contacting members having contacting points at their tips, the two contacting members being so arranged that an electromagnetic repulsive force is created therebetween when a current passes through the contacting members and the contacting points at the time the circuit breaker is closed, at least one of said contacting members being further provided with current limiting engagement parts, which are released when the current passing through the circuit breaker exceeds a predetermined value. Upon disengagement of the engagement portions, the contacting members are abruptly separated by the electromagnetic repulsive force, and the current passing through the breaker is interrupted. The engagement parts are reengaged when the contacting members are opened at their maximum opening positions by means of, for instance, a conventional tripping mechanism.

3,562,681

INDICATOR DEVICE WITH MAGNETIC SWITCH CLOSURE

Richard J. Binder, 220 Cannonbury Drive, St. Louis, Mo. 63119

Filed Dec. 11, 1968, Ser. No. 798,841
Int. Cl. H01h 73/12
U.S. Cl. 335—17 8 Claims

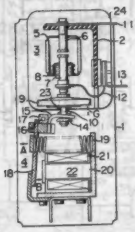
A movable magnet carrying member; a dial having one or more switches in the path of the moving magnetic field produced by the moving magnet. The switches are actuated in response to the presence of a sufficiently high magnetic field to operate a control circuit. The dial is movable to vary the locations of the switches.

3,562,682

VACUUM SWITCHING APPARATUS

Katsuo Ohwada and Noriyuki Ichihara, Tokyo, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan, a corporation of Japan

Filed June 10, 1969, Ser. No. 831,951
Claims priority, application Japan, June 10, 1968, 43/39,550; Sept. 10, 1968, 43/64,798
Int. Cl. H01h 9/30
U.S. Cl. 335—201 7 Claims



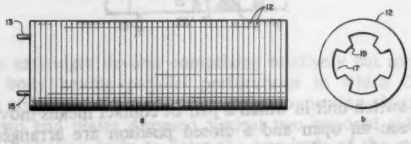
A vacuum switching apparatus having a stationary contact member and movable contact member disposed in a vacuum vessel which is so designed as to use a pressure equal to a difference between the interior pressure of the vessel and the atmospheric pressure in urging the movable contact member into the vessel for contact with the stationary contact member, characterised in that the force of closing the movable contact member, the force of a reset spring means for releasing the movable contact member by means of an operating lever engaging said member, the initial attracting force of an electromagnetic device for disengaging said member and the attracting force with which the contact element of said electromagnetic device is attached to said member are all kept in a prescribed relationship in order to prevent the release of the movable contact member which might occur due to the broken vacuum of the vessel at the time the movable contact member is closed for contact with the stationary member and also prevent the sucking of the movable contact member which might be caused by said broken vacuum when both contact members are disengaged from each other.

3,562,683

QUADRUPOLE FOCUSING OF ELECTRON BEAMS

Charles M. De Santis, Neptune, N.J., and Bruno Zotter, Geneva, Switzerland, assignors to the United States of America as represented by the Secretary of the Army

Filed Apr. 7, 1969, Ser. No. 814,023
Int. Cl. H01f 5/00
U.S. Cl. 335—213 3 Claims



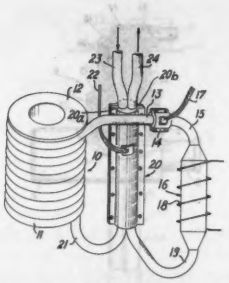
A focus coil assembly compirses four intertwined helices surrounding an electron beam to-be-focused. Oppositely directed currents in adjacent helices produce a continuous and distributed quadrupole magnetic focusing field. Field concentration can be achieved by means of a magnetic yoke surrounding the helix assembly.

3,562,684

SUPERCONDUCTIVE CIRCUIT

Jean Sole, Clamart, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 6, 1969, Ser. No. 804,853
Claims priority, application France, Mar. 15, 1968, 143,930, 143,931
Int. Cl. H01f 7/22
U.S. Cl. 335—216 10 Claims



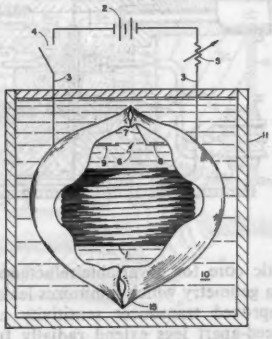
A superconductive circuit, characterised in that it comprises at least one winding of a conductive element of superconductive material having an outer electrically insulating sheathing, the said element being in the form of a continuous hollow tube in which a cooling fluid flows in the immediate vicinity of the said superconductive material and a member for electrically connecting the ends of the said element, said member connecting the said ends by their outer surface where there is no sheathing and leaving the inlet and outlet for the said cooling fluid for the said element independent of one another.

3,562,685

FOIL WRAPPED SUPERCONDUCTING MAGNET

Jacob L. Zar, North Andover, Mass., assignor to Avco Corporation, Cincinnati, Ohio, a corporation of Delaware

Original application Sept. 28, 1967, Ser. No. 671,441, now Patent No. 3,530,682, dated Sept. 29, 1970. Divided and this application June 24, 1969, Ser. No. 844,244
Int. Cl. H01f 7/22
U.S. Cl. 335—216 2 Claims

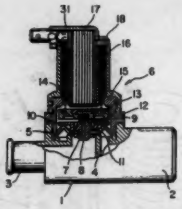


A superconducting device and method of cooling same wherein the magnet is enclosed in a material that functions as a condensor during cool down of the device. During cool down, liquids, solid contaminants and the like condense on the condensor material during final cool down.

3,562,686
MAGNETIC VALVE INCORPORATING A FLAT ARMATURE

Alwin Borschers, Flensborg, Germany, assignor to Danfoss A/S, Nordborg, Denmark, a company of Denmark

Filed June 20, 1969, Ser. No. 835,184
Int. Cl. H01f 3/00, 7/08
U.S. Cl. 335—279 8 Claims

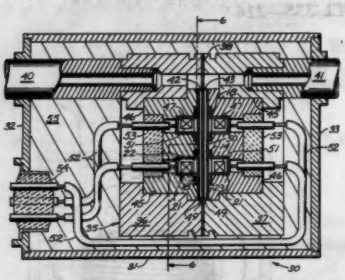


A magnetic valve assembly having a specially formed one piece frame which forms a valve chamber and a hollow coil support. The coil support has a coil wound thereon and also provides supporting structure for an E-shaped magnet. The frame has channels or grooves for receiving the two ends of the coil and pockets for receiving the two ends of the coil and pockets for receiving connecting lugs. The frame with the associated coil and magnet is surrounded with a form fitting plastic envelope which is applied with a molding operation.

3,562,687
VARIABLE-RELUCTANCE TRANSDUCER AND MAGNETIC CORE

John R. Tavis, Mariposa, Calif., assignor, by mesne assignments, to Tavis Corporation, Mariposa, Calif., a corporation of California

Filed June 23, 1969, Ser. No. 835,522
Int. Cl. H01j 21/02
U.S. Cl. 336—30 10 Claims

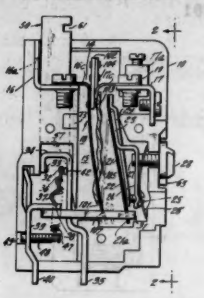


A magnetic core for a variable-reluctance transducer, and having a geometry which minimizes leakage magnetic flux for improved transducer sensitivity and linearity. Slender spaced-apart legs extend radially from a center pole to define a U-shaped channel in which an energizing coil is fitted. Enlarged arcuate tabs extend laterally from the ends of the legs to form a segmented outer pole of the core. When assembled in a transducer adjacent a movable armature spaced therefrom by a variable air gap, the core has very low iron-path reluctance, and an air-gap reluctance which is substantially lower than the leakage-path reluctance.

3,562,688
QUICK TRIP OVERLOAD RELAY HEATERS

Frank W. Kussy, Birmingham, and David A. Pickett, Warren, Mich., assignors to I-T-E Imperial Corporation, Philadelphia, Pa., a corporation of Delaware

Filed Oct. 28, 1968, Ser. No. 771,105
Int. Cl. H01h 61/13, 71/16, 71/52
U.S. Cl. 337—62 14 Claims

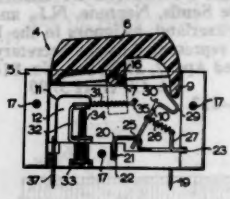


A normal overload relay having a bimetal tripping means is provided with a replaceable quick trip heater for the bimetal, such heater is so constructed that the tripping bimetal is quick acting under extreme fault conditions, yet under normal fault conditions the tripping bimetal acts relatively slowly to trip the relay in a normal manner. The quick trip heater is constructed with a directly heated bimetal which deflects very rapidly upon the occurrence of severe fault conditions. If the fault is severe enough the heater bimetal physically engages the tripping mechanism directly to operate the latter much more rapidly than the tripping bimetal would when deflecting solely as a result of heat absorbed thereby.

3,562,689
SWITCH UNIT, ESPECIALLY TOGGLE SWITCH UNIT

Siegfried Bar, Schalksmuhle, Westphalia, Germany, assignor to Bar Elektrowerke GmbH, Schalksmuhle, Westphalia, Germany

Filed Apr. 23, 1969, Ser. No. 818,604
Claims priority, application Germany, Apr. 25, 1968, P 17 63 252.9; Nov. 13, 1968, P 18 08 524.0
Int. Cl. H01h 71/14
U.S. Cl. 337—77 14 Claims



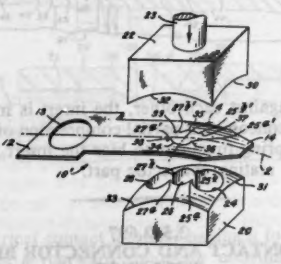
A switch unit in which a pair of contact means movable between an open and a closed position are arranged in a pair of chambers formed in a socket, in which an operating member cooperates with one of said contact means to move the same between the open and the closed position and with the other contact means to move the latter to the closed position, and in which heat-responsive means cooperate with the other of the contact means to move the latter from the closed to the open position when overload occurs in the circuit connected to the contact means. The unit may also include a signal lamp

mounted on the operating member and the signal lamp may be connected to the contact means in such a manner that the lamp is energized either when the other contact means are in the open or when they are in the closed position.

3,562,690
SNAP-ACTING THERMOSTATIC ELEMENT AND METHOD FOR MAKING SAME

Hamlet D. Vezza, Seekonk, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex., a corporation of Delaware

Filed Apr. 28, 1969, Ser. No. 819,868
Int. Cl. H01h 37/54, 71/16
U.S. Cl. 337—89 9 Claims

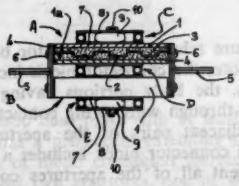


A thermally responsive multimetallic element formed with a dished area to make it snap-acting is provided with a plurality of deformations formed in pairs in the dished portion of the strip with each pair comprising two points and ridge connecting each point in a pair with a corresponding point in the adjacent pair. These deformations enhance the snap characteristics of the element and reduce creep prior to snap action of the element from one configuration to another at a critical temperature.

3,562,691
FUSE CARTRIDGES

Jean Pierre Cinquin, Lyon, France, assignor to Lucien Ferraz & Cie., Lyon, France, a French joint-stock company

Filed Sept. 16, 1969, Ser. No. 858,283
Claims priority, application France, Sept. 27, 1968, 50,437
Int. Cl. H01h 85/02
U.S. Cl. 337—185 9 Claims

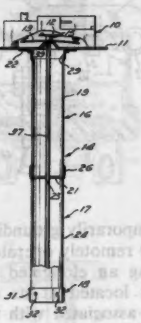


Fuse cartridges devices comprising relatively flat insulating body having parallel perforations in which the fusible strips are disposed, these strips connecting electrically two end plates disposed against two opposed sides of the insulating body to form the terminals of the cartridge. Cooling plates are applied against the preferably metallized major faces of the body and means are provided to dissipate the heat which the cooling plates receive from the insulating body. These heat-dissipatting means may be in the form of water-cooled coils or of air-cooled fins. In a modification the cooling plates are in heat-conducting contact with one of the end plates, adapted to be itself applied in heat-conducting contact against a cooled current-carrying bar.

3,562,692
THERMOSTAT ASSEMBLY

Howard W. Bletz and Donald J. Schmitt, Mansfield, Ohio, assignors to Therm-O-Disc, Incorporated, Mansfield, Ohio, a corporation of Ohio

Filed May 22, 1969, Ser. No. 826,937
Int. Cl. H01h 37/04, 37/34, 37/54
U.S. Cl. 337—354 18 Claims

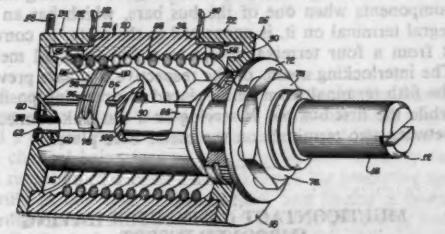


A bi-metallic snap disc operated thermostat wherein the disc is mounted by means of a tubular extension at a location remote from the switch body assembly. The tubular extension is formed by one or more substantially similar tubular members having an apertured end wall at one end. The disc retainer cap is mounted on the end wall end of the adjacent tubular member and an elongated operating rod extends along the tubular extension through the apertured end wall from the disc to the switch body. The thermostat may be assembled in combination with a second high-limit thermostat, an anticipator heater, or both without modifying the tubular extension structure.

3,562,693
PRECISION POTENTIOMETER

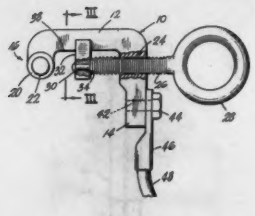
Dale Allen Henning, Janesville, Wis., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill., a corporation of Delaware

Filed Jan. 24, 1969, Ser. No. 793,785
Int. Cl. H01c 5/02
U.S. Cl. 338—149 8 Claims



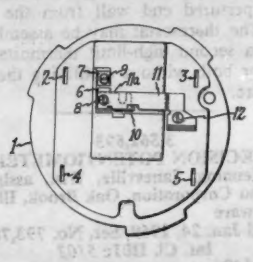
A precision potentiometer, including a housing with a coil resistance element therein,, a unitary plastic rotor member having a shaft element and a hollow rotor element, a carrier axially slidable on the rotor element, an output contact bar within the hollow rotor element, a slider contact on the carrier slidingly engaging the resistance element and extending through a slot in the rotor element and slidingly engaging the output contact bar.

3,562,694
ELECTRICAL GROUNDING CLAMP
Philip T. Howe, 4939 Warsaw Drive, Jackson, Mich. 49201
Filed Jan. 26, 1970, Ser. No. 5,530
Int. Cl. H01r 7/08
U.S. Cl. 339—14 7 Claims



A clamp for temporarily grounding an electrical terminal, which may be remotely operated by insulated means, if desired, utilizing an elongated head having terminal engaging portions located at its ends, and a movable clamping element associated with the head for engaging the terminal and clamping the head into a firm supporting and electrical conducting relationship with the terminal.

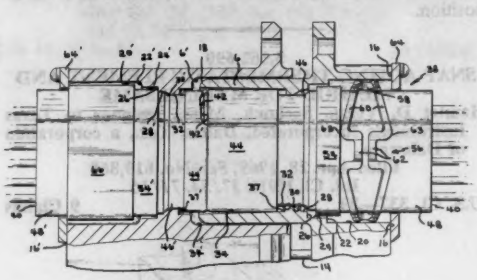
3,562,695
TERMINAL AND BUS BAR CONSTRUCTION FOR WATT-HOUR METERS
Ernest B. Shackford, Berwick, Maine, assignor to General Electric Company, a corporation of New York
Filed Jan. 31, 1969, Ser. No. 795,591
Int. Cl. H01r 29/00
U.S. Cl. 339—31 12 Claims



A pair of interlocking bus bars are provided for a watt-hour meter to eliminate risk of short circuiting meter components when one of the bus bars, which has an integral terminal on it, is connected to the meter to convert it from a four terminal meter to a five terminal meter. The interlocking means of the respective bus bars prevent the fifth terminal from being placed in operating position while the first bus bar is serving as a test link connected between two terminals on the meter base plate.

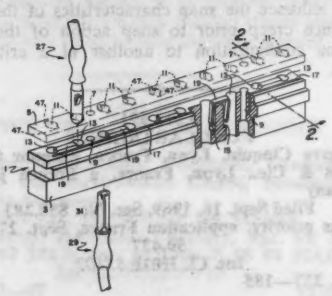
3,562,696
MULTICONTACT CONNECTOR HAVING IMPROVED INSERT
Harry Edward Barnhart, Hummelstown, and Gilbert Douglas Ferdon, Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed Jan. 17, 1969, Ser. No. 791,977
Int. Cl. H01r 13/52
U.S. Cl. 339—60 1 Claim

Multicontact electrical connector part, which is engageable with a complementary connector part, has a shell member and an insert in the shell. The insert is axially movable, to a limited extent, in the shell and is resiliently biased in the direction of the mating face of the insert. When the connector part is mated with the complimentary part, and the mating face of the two connector parts



are pressed against each other, the insert is moved rearwardly with concomitant partial compression of the spring so that the spring functions to bias the insert against the insert of the mating connector part.

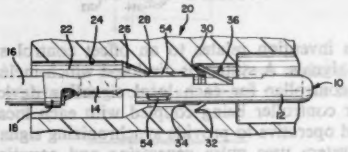
3,562,697
PIN CONTACT AND CONNECTOR BLOCK THEREFOR
James Francis Gillespie, Palmyra, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Sept. 16, 1968, Ser. No. 759,968
Int. Cl. H01r 9/00
U.S. Cl. 339—198 4 Claims



The disclosure relates to a connector block and a pin contact therefore, the connector block including top and body portions, the body portions having a plurality of apertures ther-through with spring contacts bridging predetermined adjacent pairs of the apertures. The body portion of the connector block includes a groove therein running adjacent all of the apertures conductive members such as a copper strip with fingers being positioned in the groove, the copper strip interconnecting predetermined ones of the spring contacts to provide a connecting pattern. An external connector member can also be provided which connects to the conductive members in the groove and extends outwardly or externally of the connector block. The top portion of the connector block includes apertures aligned with the apertures of the body portion and of the same diameter as the apertures thereof except that the bottom portion of the walls thereof include a stopping member in the form of steps and the top portion includes a pair of inwardly extending shoulders with sufficient room between shoulders to receive pin contact tynes. Also included is a pin contact for mating with the connector block having a pair of tynes

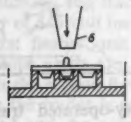
whereby the pin contact can be inserted into the connector block apertures between the shoulders and rotated by ninety degrees to provide a locking action therein with the shoulders. Rotation of the pin contact is possible in only one direction due to the stopping member therein.

3,562,698
ELECTRICAL CONTACT
Roydon William Merry, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Feb. 27, 1969, Ser. No. 802,808
Int. Cl. H01r *9/00*
U.S. Cl. 339—217 **2 Claims**



An electrical contact terminal having a forward mating portion and a rearward conductor attaching portion. A lance is struck from the mating portion for securing said terminal within an insulating housing, said lance being disposed partially within the confines of the terminal mating portion to provide strength and protection for the lance.

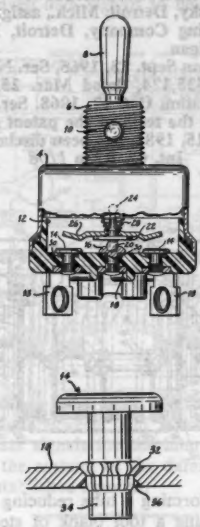
3,562,699
ELECTRIC CONTACT AND BASE PLATE ASSEMBLY
Leif Branden and Arne Karl Ryr, Tyreso, Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden, a corporation of Sweden
Filed Apr. 17, 1968, Ser. No. 722,115
Claims priority, application Sweden, June 2, 1967, 7,730/67
Int. Cl. H01r *9/14, 5/06;* **F11b** *19/04*
U.S. Cl. 339—220 **1 Claim**



A thermoplastic base plate with at least two recesses, one of which has a projection extending therefrom, has a contact piece of metal connected thereto. The contact piece has at least two apertures, one of which encircles the projection of the base plate, and is fastened to the base plate by means of riveting the projection to the contact piece.

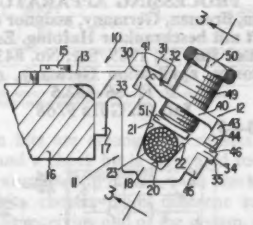
3,562,700
ELECTRICAL CONTACT-TERMINAL ASSEMBLY
Richard G. Miller, Milwaukee, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis., a corporation of Delaware
Filed Sept. 29, 1969, Ser. No. 861,872
Int. Cl. H01r *9/14, 5/08*
U.S. Cl. 339—220 **3 Claims**

The shank of an electrical contact rivet for an electrical switch is formed with an intermediate splined portion, the major diameter of which is greater than either the shank or the cooperating terminal opening. The splined portion is upset when the terminal is driven upon the



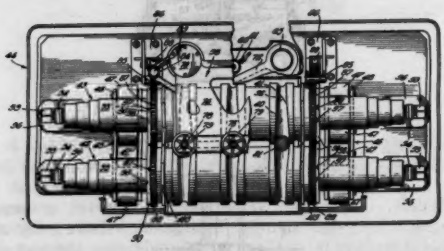
shank to form a seat against which the terminal is subsequently riveted to form a good electrical and mechanical connection irrespective of any other element.

3,562,701
CABLE CONNECTOR
Harley J. Orr, Bedford, N.H., assignor to Sola Basic Industries, Inc., Milwaukee, Wis., a corporation of Wisconsin
Filed May 15, 1968, Ser. No. 729,176
Int. Cl. H01r *7/12*
U.S. Cl. 339—272 **2 Claims**



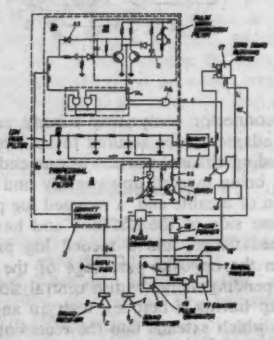
A cable connector comprising a body portion having a top plate adapted to be secured to an insulating block, and a depending channel portion at one end, the sides of the channel being tapered downwardly and inwardly for the reception of a cable end, a recessed lug projecting upwardly at one side of the channel, and having a downwardly turned flange, and a second lug projecting outwardly from the opposite side edge of the channel and having a depending flange with a central slot therein. An L-shaped cap having a first leg with an angularly offset end portion which extends into the recess of the recessed lug, and a second leg having a slot therein which coacts with the central slot in the depending flange of the second lug defining a protuberance at the end of the second leg which seats beneath the second depending flange, a threaded bore in the first leg, and a cable clamping screw rotatable in the threaded bore.

3,562,702
DIES AND ROLL MANUFACTURE BY ELECTROEROSION
Michael J. Celovsky, Detroit, Mich., assignor to Industrial Tool Engineering Company, Detroit, Mich., a corporation of Michigan
Original application Sept. 13, 1965, Ser. No. 486,652, now Patent No. 3,435,174, dated Mar. 25, 1969. Divided and this application Oct. 17, 1968, Ser. No. 785,425
The portion of the term of the patent subsequent to Sept. 15, 1981, has been disclaimed
Int. Cl. B23p *1/08*
U.S. Cl. 219—69 7 Claims



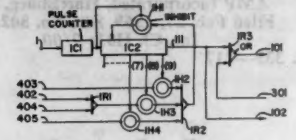
A method of forming a tube reducing tool comprising the step of forming a tool blank of steel having a roll portion and drive shaft portion. The roll portion is processed to form a series of spaced roll blanks along the length of the tool which is then heat treated to a hardened state. Thereafter, electrodes are positioned in lateral tangency to and generally beside the steel roll blanks to be machined. The electrodes are then caused to emit an electrical spark discharge while causing a tangential surface of the roll blanks to move along the length of the electrodes establishing a cutting zone along the tangential surfaces opposed to the electrodes forming tapered grooves extending generally in arcuate directions therein.

3,562,703
ECHO SOUND PULSE RECEIVING AND PROCESSING APPARATUS
Walter Grada, Bremen, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany
Filed July 23, 1969, Ser. No. 843,996
Claims priority, application Germany, Aug. 3, 1968, P 17 66 882.5
Int. Cl. G01s *9/68*
U.S. Cl. 340—3 9 Claims



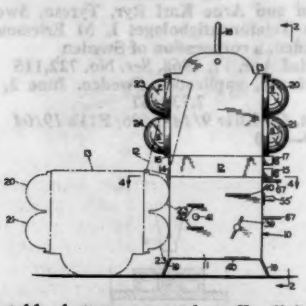
An echo sounding arrangement using both amplitude and width filtering for distinguishing between bottom echoes and echoes from submerged floating objects whose dimensions are less than a predetermined amount.

3,562,704
OFFSET CONTROL SYSTEM FOR TRAFFIC SIGNAL
Shunsuke Iwamoto, Hiroo Watanabe, and Tadao Endo, Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan, a corporation of Japan
Continuation of application Ser. No. 569,495, Aug. 1, 1966. This application Sept. 17, 1969, Ser. No. 859,481
Claims priority, application Japan, July 30, 1965, 40/46,489
Int. Cl. G08g *1/00*
U.S. Cl. 340—40 11 Claims



This invention relates to an offset control system for traffic signals. A system is disclosed which includes a separate controller for each local signaling device, with a master controller being coupled with each local controller and operative to provide synchronizing signals thereto. The system uses pulse generating and counting circuits to accomplish selected adjustments for the offset of individual controllers. Circuit details for a preferred embodiment of the invention are provided.

3,562,705
PORTABLE ADJUSTABLE TRAFFIC CONTROL SIGNAL LIGHT DEVICE
Ernest L. Paris, 126 SE. Garfield, Camas, Wash. 98607
Filed June 7, 1968, Ser. No. 735,289
Int. Cl. G08g *1/085, 1/095*
U.S. Cl. 340—41 1 Claim

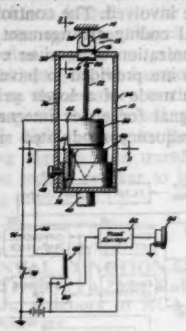


A portable battery-operated traffic light signal device having red, green and amber signal lights on each of two opposite faces, the six lights connected in pairs on three circuits with a red and a green light on opposite faces in each of two circuits and the amber lights on opposite faces in the third circuit; continuously operating circuit alternating means; and manually operable switch assemblies for causing each circuit separately to be turned permanently on or off or for causing all three circuits to be operated intermittently through said alternating means.

3,562,706
VEHICLE SELF LEVELING VIBRATION SENSITIVE ALARM DEVICE
Barry D. Mason, 2037 Hollywood Way, Burbank, Calif. 91505
Filed Feb. 12, 1968, Ser. No. 704,708
Int. Cl. B60r *25/10*
U.S. Cl. 340—65 7 Claims

An automatic alarm comprising an electronic alarm system and a self leveling contact mechanism which includes a vibration sensitive pendulum contact member

and a levelable contact member which is adjustable relative to the pendulum contact. The electrical system is



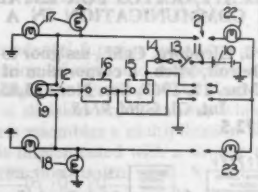
energized when the two contact members make electrical contact, which then sounds an alarm such as an automobile horn.

3,562,707

DIRECTION INDICATOR SYSTEMS FOR TRACTOR-TRAILER VEHICLES

Eric Bernard Parkes, Selly Oak, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England, a British company

Filed Aug. 21, 1968, Ser. No. 754,245
Claims priority, application Great Britain, Aug. 25, 1967, 39,247/67
Int. Cl. B60g *1/38*
U.S. Cl. 340—81 3 Claims



A direction indicator system for a tractor-trailer vehicle includes a switch on the tractor for energising the tractor lamps by way of a circuit including first and second flasher units, the first flasher unit only being operative when the tractor lamps alone are energised because the current flow through the second flasher unit is insufficient to energise it. When the trailer is coupled the first flasher unit is short-circuited and the second flasher unit alone operates.

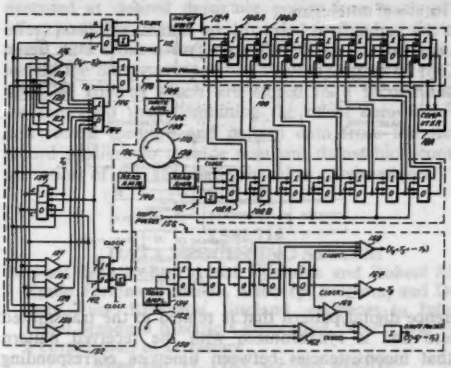
3,562,708

DEVICE TO ELIMINATE UNDESIRABLE TRANSIENT EFFECTS ON COMPUTER OPERATIONS AND THE LIKE

Lawrence E. Verbarg, Kirkwood, Mo., and Allan J. Summers, deceased, late of Kirkwood, Mo., by Rozema L. Summers, administratrix, Kirkwood, Mo., assignors to McDonnell Douglas Corporation, St. Louis County, Mo., a corporation of Maryland

Continuation-in-part of application Ser. No. 299,119, July 31, 1963. This application June 24, 1968, Ser. No. 740,833
Int. Cl. G06f *11/00;* G11c *7/02*
U.S. Cl. 340—146.1 10 Claims

A device for preventing data signals that may be adversely affected by exposure to nuclear radiations or other transient conditions from replacing earlier received data signals in computer and like devices including means for temporarily storing data signals in a condition in which they are relatively unlikely to be adversely affected by exposure to nuclear radiations and other transient conditions, comparing the temporarily stored data signals with later received data signals to determine the amount



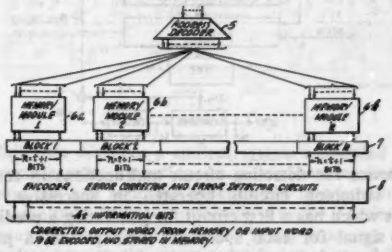
of difference therebetween, and substituting the temporarily stored data signals for the later received data signals whenever the amount of the difference therebetween exceeds a preestablished amount.

3,562,709

CORRECTION OF BLOCK ERRORS IN TRANSMISSION OF DATA

Chitoor V. Srinivasan, Princeton, N.J., assignor to RCA Corporation, a corporation of Delaware

Filed Sept. 12, 1968, Ser. No. 759,363
Int. Cl. G08c *25/00;* G06f *11/12*
U.S. Cl. 340—146.1 6 Claims



Information bits are arranged in subsets according to certain rules and a check bit is generated for each subset. The bits are transmitted in blocks, each block consisting of information bits chosen from different subsets and a check bit. At the receiving end of the system, a "syndrome" is generated which indicates whether any errors have occurred and if so the bits which are in error. The type of symmetry exhibited by the syndrome indicates which block has one or more errors and in response to this information and to particular syndrome bits the errors automatically are corrected.

3,562,710

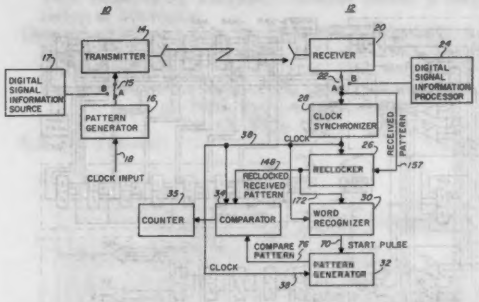
BIT ERROR DETECTOR FOR DIGITAL COMMUNICATION SYSTEM

Michael E. Halleck, Boulder County, Colo., assignor to Ball Brothers Research Corporation, Boulder, Colo., a corporation of Colorado

Filed Apr. 24, 1968, Ser. No. 723,737
Int. Cl. G08c *25/00;* H04l *7/00*
U.S. Cl. 340—146.1 21 Claims

A bit error detector for use with a digital communication system to quantitatively measure bit errors in received digital information transmitted from a remote location

to a receiving station. A digital pattern, transmitted at a predetermined bit rate from the remote location, is received at the receiving station and compared with a



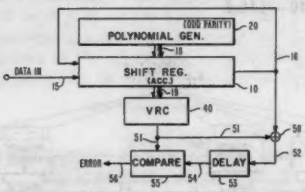
reference digital pattern that is related to the transmitted pattern and is synchronized with the received pattern so that inconsistencies between timewise corresponding bits produce indications reflecting system errors.

3,562,711

APPARATUS FOR DETECTING CIRCUIT MALFUNCTIONS

Robert H. Davis and Paul E. Boudreau, Raleigh, and Jerry S. Harris, Cary, N.C., assignors to International Business Machines Corporation, Armonk, N.Y., a corporation of New York

Filed July 16, 1968, Ser. No. 745,300
Int. Cl. G08c 25/00; H04l 1/10
U.S. Cl. 340—146.1 **10 Claims**



A device for detecting circuit malfunctions in certain linear switching circuits operated in successive time periods which has a first circuit for generating a predicted parity signal for each successive time period, a parity check circuit for generating a signal indicative of actual parity during each successive time period, and a comparator for comparing the signals representing the predicted parity and the actual parity during each successive time period, thereby to indicate any circuit malfunction during each such successive time period.

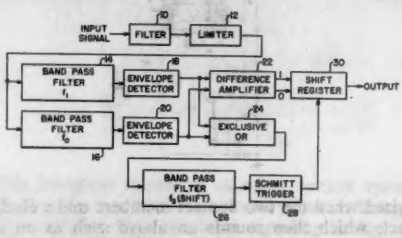
3,562,712

REMOTE TRANSMISSION OF CONTROL SIGNALS

George M. Thorne-Booth, Murrysville, Pa., and Chauncey S. Miller, Concord, Mass., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa., a corporation of Pennsylvania

Filed May 11, 1967, Ser. No. 637,723
Int. Cl. H04q 9/00
U.S. Cl. 340—168 **6 Claims**

The remote transmission of control signals for the particular application to control the performance of a moving train vehicle or the like requires a very high degree of fail-safe control system operation. The apparatus here described in the event of any component failure is designed to revert to a predetermined and lower priority command signal condition of operation. Any such component failure, for example during speed control of the train, is designed to cause a signal interpretation to occur such that a lower than desired speed will result or the vehicle will receive a command to stop since human life and property are involved. The control signals are binary coded in a serial coding arrangement which requires no separate synchronization of receiver equipment, and special signal filters are provided to have a high probability of failing to the mode of a lower priority output signal or no output signal for either internal or external fault conditions. A frequency modulated signal is transmitted



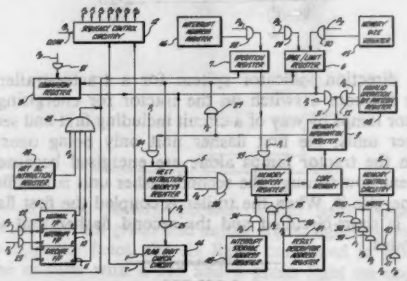
from the remote location wayside transmitter to the vehicle, said signal having first and second frequencies corresponding to the binary command information to be transmitted. A vehicle-carried receiver separates the binary command information into a repetitive comma free command signal which is converted by a logic matrix circuit into the desired vehicle command signal information. A fail-safe coupling of this signal to the desired operation control device is now accomplished to assure the desired safe operation of the vehicle.

3,562,713

METHOD AND APPARATUS FOR ESTABLISHING A BRANCH COMMUNICATION IN A DIGITAL COMPUTER

Roger E. Packard, Glendora, Calif., assignor to Burroughs Corporation, Detroit, Mich., a corporation of Michigan

Filed Mar. 17, 1967, Ser. No. 623,858
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 **19 Claims**



A method for establishing a direct branch communication from an object program to a subroutine of the master control program without resorting to hardware. The master control program includes address words identifying the locations in memory of the subroutines to which a direct branch communication is desired. Each address word includes a unique flag digit. When an object program attempts to establish a branch communication to a subroutine in the master control program by fetching one of the address words, the communication is in fact only established if the fetched word contains the flag digit. The same steps initiate the execution of a test routine either in the event the information called by the object program does not contain the flag digit or in the event a hardware interruption takes place.

Apparatus for establishing the direct branch communication includes a first register for storing computer instructions, a second register for storing a memory ad-

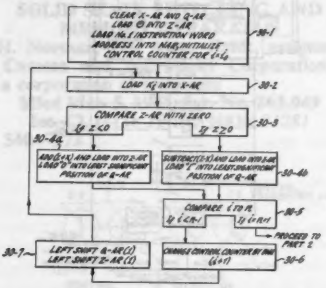
dress, and a third register for storing information to be exchanged with the location in the computer memory identified by the address stored in the second register. Responsive to the storage of a branch communication instruction in the first register, a gate transfers a selected address word identifying the location in the memory of a subroutine from the memory to the third register. A check circuit inspects the selected address word to determine if a flag digit is present. Responsive to the presence of the flag digit, a gate transfers the selected address word to the second register to initiate execution of the corresponding subroutine.

3,562,714

TRANSCENDENTAL FUNCTION GENERATOR

Henry S. Miiller, Yardley, Pa., and Robert J. Linhardt, Moorestown, N.J., assignors to RCA Corporation, a corporation of Delaware

Filed Sept. 7, 1967, Ser. No. 666,183
Int. Cl. G06f *7/39*
U.S. Cl. 340—172.5 **5 Claims**



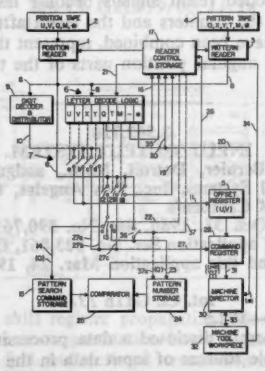
A transcendental function generator apparatus for two-part evaluation of sine and cosine functions, as well as other functions, is described. The first of the two parts resembles a division-like iteration; while the second of the two parts resembles a multiplication-like iteration. The generator is implemented with a storage unit and a transcendental function control unit.

3,562,715

REPEAT PATTERN CONTROL FOR AUTOMATIC MACHINES

Everett R. Bishop, Waynesboro, Va., and Vincent A. Labella, Broomall, Pa., assignors to General Electric Company, a corporation of New York

Filed Nov. 15, 1967, Ser. No. 683,318
Int. Cl. G05b *19/00*
U.S. Cl. 340—172.5 **12 Claims**



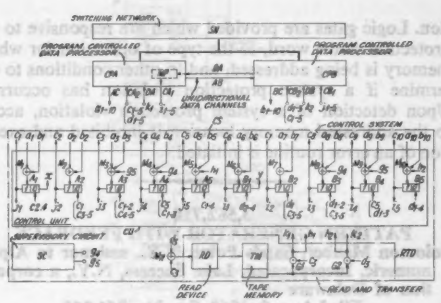
An arrangement for operating on an object with an automatic machine under control of command data stored in a plurality of record mediums. The data includes data representing a plurality of offset positions from a zero reference position, and identification codes for selecting desired ones of a plurality of patterns of control to be executed at desired departure points from each of the offset positions. Means are provided for reading the command data from a first record medium in sequence, selecting the data corresponding to desired ones of the patterns of control which are stored in a second record medium, and then combining the offset data from the first record medium and pattern data from the second record medium to provide resultant data which controls operation of the automatic machine on the object.

3,562,716

DATA PROCESSING SYSTEM

Bernard Jean Robert André Fontaine and Robert Pierre Emile Ferdinand Salade, Antwerp, Belgium, and Desne Jean Rose, Blunsdon, England, assignors to International Standard Electric Corporation, New York, N.Y., a corporation of Delaware

Filed Jan. 17, 1968, Ser. No. 698,610
Claims priority, application Belgium, Jan. 24, 1968, 693,071
Int. Cl. G06f *11/04, 15/16*
U.S. Cl. 340—172.5 **40 Claims**



This case discloses a control system associated to two processing units operating on a load-sharing basis and storing test and restoring programmes in a memory outside these units. When a processor is faulty a series of test programmes is performed in this faulty processor and repeated as long as the programme is not successfully executed. When a processor has been tested successfully data necessary to start its operation is copied from the other processor or from the memory of the control system depending on this other processor correctly operating or not. During the test and restoring operations the faulty processor informs the other processor of each change of status by means of five status bistables. When both processors are faulty they are tested alternately under the control of a supervision circuit.

3,562,717

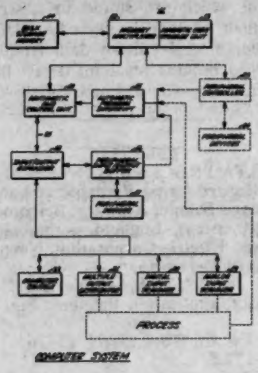
SYSTEM PROTECTION APPARATUS

Sherril A. Harmon, Wallace N. Patterson, and Emery A. White, Phoenix, Ariz., assignors to General Electric Company, a corporation of New York

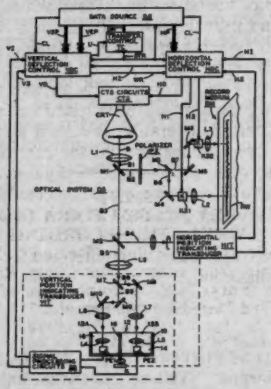
Filed Feb. 23, 1968, Ser. No. 707,564
Int. Cl. G06f *11/00*
U.S. Cl. 340—172.5 **8 Claims**

Apparatus in a computer system for protecting operating programs and related data stored in the computer memory and for preventing unauthorized actions in the system while an undebugged program is being executed by the system. A status register is provided in the system arithmetic unit for storing a system protection status

word. Another register is provided to identify the group or volume of memory storage locations whose protection status is defined by the status word in the status register. Each time memory is addressed, the status word applicable to the addressed memory storage location is checked. The status word defines one of a plurality of protection states for the addressed memory storage location. Logic gates are provided which are responsive to the protection status word, to the type of operation for which memory is being addressed, and to other conditions to determine if a system protection violation has occurred. Upon detection of a system protection violation, access to the addressed memory location is inhibited and execution of an error routine is initiated.

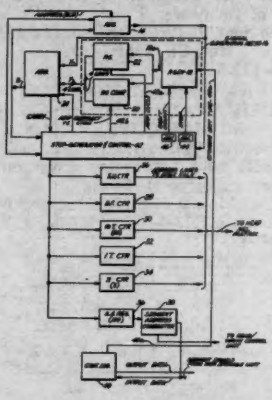


3,562,718
PATTERN GENERATOR WITH FEEDBACK
Solomon Manber, Sands Point, N.Y., assignor to Alphanumeric, Incorporated, Lake Success, N.Y., a corporation of Delaware
Filed Aug. 8, 1968, Ser. No. 751,232
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 **16 Claims**



Apparatus for generating patterns on a receiving medium comprises a beam source assembly wherein the patterns to be generated are "painted" as combinations of successive strokes by the beam. The beam from each stroke is split to follow two paths, one toward the receiving medium and the other toward a transducer assembly, which generates signals as the beam moves over it. These signals, which effectively indicate the instantaneous position of the beam, are compared with coded combinations of signals specifying the desired terminal positions of the beam to generate control signals which control the deflection of the beam which control the deflection of the electron beam of the cathode ray tube. Further means are shown wherein the light directed toward the record can be selectively exposed.

3,562,719
ADDRESS TRANSLATOR
Donald P. Hynes, West Covina, and Donald W. Pohlman, Glendora, Calif., assignors to Burroughs Corporation, Detroit, Mich., a corporation of Michigan
Filed May 23, 1969, Ser. No. 827,332
Int. Cl. G06f *7/22*
U.S. Cl. 340—172.5 **14 Claims**

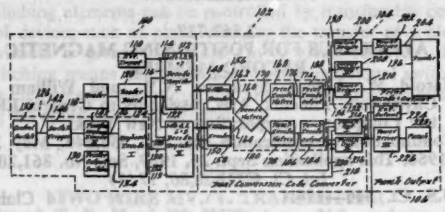


A translator of addresses for a rotating record member file. A parameter circuit is provided for each different information format for which addresses are to be translated. Each parameter circuit forms coded parameter signals for the corresponding format. At least one parameter signal is formed for each address part in the translated address. A circuit forms the complement of the parameter signals. An adder receives the address to be translated and combines the address with the parameter signals or the complement of the parameter signals, thereby forming a coded result signal. The adder also combines the results formed thereby with the parameter signals or the complement of the parameter signals. A counter is provided for each of a plurality of the address parts and counts the number of times the corresponding parameter complement is combined with the address or the result signals before the coded result signals become less than zero. The state of the counters and the result after all parameter signals have been combined, represent the transducer selection and angular position parts of the translated address.

3,562,720
INPUT/OUTPUT SYSTEM
Donald R. Bernier, Detroit, Mich., assignor to Intercontinental Systems, Inc., Los Angeles, Calif., a corporation of California
Application Oct. 31, 1966, Ser. No. 590,761, which is a division of application Ser. No. 503,861, Oct. 23, 1965. Divided and this application Mar. 24, 1969, Ser. No. 840,562
Int. Cl. G11b *13/00*
U.S. Cl. 340—172.5 **6 Claims**

There is herein disclosed a data processing system in which multiple sources of input data in the form of successive columns of parallel bit signals having an electrical characteristic of a first level if true and a second level if

not true are selectively stored in register means comprising a plurality of storage circuits having set and reset states controlled by clocking circuit means in the form of a

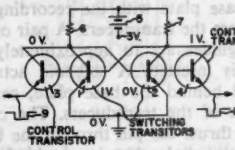


reset circuit operable during a first period and an enabling circuit having an electrical characteristic which changes to the first level during a period at least as late as the end of the first period.

3,562,721
SOLID STATE SWITCHING AND MEMORY APPARATUS

Robert H. Norman, Los Altos, Calif., assignor to Fairchild Camera and Instrument Corporation, Syosset, N.Y., a corporation of Delaware

Filed Mar. 5, 1963, Ser. No. 263,049
Int. Cl. G11c *11/40;* **H03k** *3/281*
U.S. Cl. 340—173 **6 Claims**



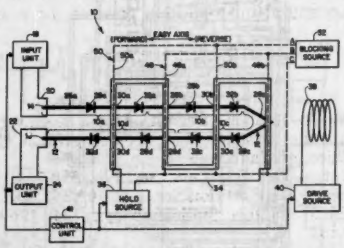
Parallel connected transistors are used in an integrated circuit array to provide a switching and memory function.

This invention relates to a semiconductor switching circuit and memory apparatus. More specifically, the invention is a switching circuit which requires two independent pulses to change state, and a high-speed data storage system using this switching circuit.

3,562,722
MAGNETIC THIN FILM SHIFT REGISTER HAVING UNIDIRECTIONAL TRANSMISSION ELEMENTS

Harvey I. Jauvtis, Belmont, Mass., assignor to Cambridge Memories, Inc., Newton, Mass., a corporation of Massachusetts

Filed Oct. 20, 1969, Ser. No. 867,675
Int. Cl. G11c *19/00, 11/14*
U.S. Cl. 340—174 **10 Claims**

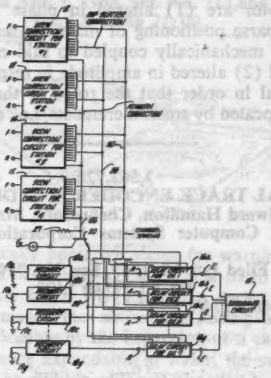


A digital shift register propagating information as regions of reverse magnetization has a successive arrangement of a first bidirectional transmission element for reciprocal propagation of the magnetic region, a first unidirectional transmission element for non-reciprocal propagation of the magnetic region, a second bidirectional transmission element, and another unidirectional transmission element in each of a series-succession of stages, with all unidirectional transmission elements having the same direction of forward propagation. A magnetic field source applies a magnetic field to the transmission elements to advance regions of reverse magnetization from one bidirectional element, through the unidirectional element in the forward direction, to the next bidirectional element. A further magnetic field erases the regions of reverse magnetization from the elements in each stage except that in one instance the regions present in the first bidirectional elements are not erased and in another instance the regions in the second bidirectional elements are not erased.

3,562,723
TAPE SKEW CORRECTION CIRCUITRY

Michael I. Behr, South Pasadena, and Robert A. Smith, Temple City, Calif., assignors to Burroughs Corporation, Detroit, Mich., a corporation of Michigan

Filed Sept. 18, 1967, Ser. No. 668,490
Int. Cl. G11b *5/44, 27/02*
U.S. Cl. 340—174.1 **14 Claims**

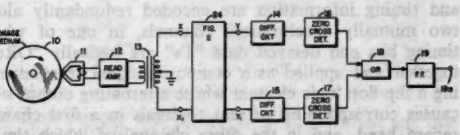


In a multiple channel tape handling system, the skew error attributable to azimuth misalignment of the tape is corrected by introducing proportional variable time delays individual to the channels. The skew error attributable to gap scatter of the read head is corrected by introducing fixed time delays individual to the channels. Specifically, fixed resistors individual to the channels on the tape determine the gap scatter correction and a single variable resistor determines the azimuth correction.

3,562,724
RECOVERY SYSTEM FOR A DIGITAL MAGNETIC RECORDING

David G. Adler, Drexel Hill, and Roland C. Hollingshead, Philadelphia, Pa., assignors to Sperry Rand Corporation, New York, N.Y., a corporation of Delaware

Filed Mar. 19, 1968, Ser. No. 714,312
Int. Cl. G11b *5/02, 5/44*
U.S. Cl. 340—174.1 **6 Claims**



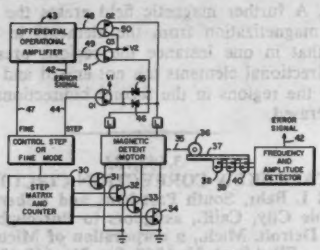
A signal recovery circuit for a digital magnetic recording system is disclosed in which the recovered signal is fed through a series of rectifying stages each intercoupled to the next via an A.C. coupling network.

3,562,725

COARSE AND FINE POSITIONING OF MAGNETIC READ HEADS

Rudolph J. Klein, King of Prussia, and Edmund J. Crossen, Norristown, Pa., assignors to Sperry Rand Corporation, New York, N.Y., a corporation of Delaware

Filed Oct. 15, 1968, Ser. No. 767,693
Int. Cl. G11b *21/10;* H01f *7/18*
U.S. Cl. 340—174.1 5 Claims



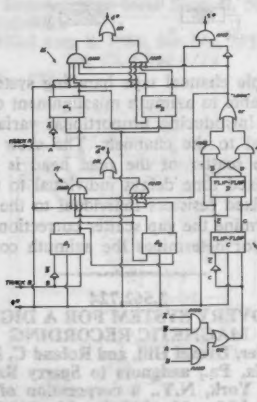
The present system provides a circuit whereby the electrical currents through the stator windings of a magnetic detent motor are (1) altered in phase relationship to effect a coarse positioning of magnetic read/write heads which are mechanically coupled to said magnetic detent motor and (2) altered in amplitude in response to a feedback signal in order that the rotor of the detent motor can be relocated by small increments, i.e., small distances.

3,562,726

DUAL TRACK ENCODER AND DECODER

Robert Edward Hamilton, Chelmsford, Mass., assignor to Viatron Computer Systems Corporation, Burlington, Mass.

Filed Jan. 10, 1969, Ser. No. 790,296
Int. Cl. G11b *5/02*
U.S. Cl. 340—174.1 5 Claims



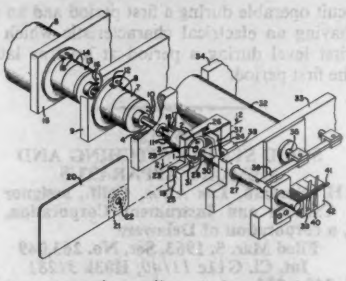
A method of encoding and decoding digital data for recording on a media on or through which amplitude and time base changes are capable of being reproduced. Data and timing information are encoded redundantly along two mutually synchronized channels, in one of which timing bits and delayed data "1's" are logically "ORed" together and applied as a composite signal complementing a flip-flop logic element whose alternating output state causes corresponding current reversals in a first channel record head, and in the other channel of which timing bits and delayed data "0's" are similarly "ORed" together and applied as a composite signal complementing a second flip-flop logic element whose alternating output state causes corresponding current reversal in the second channel record head. The data, not being dependent upon a time base in recording, can be played back at rates higher or lower than the original recording speed.

3,562,727

APPARATUS FOR POSITIONING MAGNETIC RECORD MEMBER

Harold W. Abbott, Syracuse, N.Y., and William R. Chynoweth, Phoenix, Ariz., assignors to General Electric Company, a corporation of New York

Continuation of application Ser. No. 553,849, May 31, 1966. This application Sept. 25, 1969, Ser. No. 861,203
Int. Cl. G11b *5/80, 17/04*
U.S. Cl. 340—174.1 4 Claims



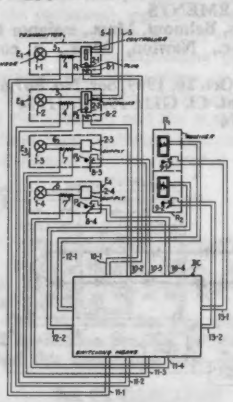
A planar magnetic medium is inserted between transducers and a base plate with the recording surface at a fixed spacing from the transducers. A pair of orthogonally disposed edge guides act to approximately position the medium as it is inserted. A solenoid actuated locating pin is mounted behind the base plate, centered on the axis of rotation of the transducers. The solenoid is actuated so as to thrust the pin through the base plate and through a locating hole that is provided in the record medium.

3,562,728

DEVICE FOR MONITORING INDUSTRIAL INSTALLATIONS

Claude Cronier, Paris France, assignor to Compagnie Francaise d'Etudes et de Construction Technip, Rueil-Malmaison, France, a French body corporate

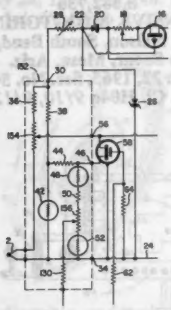
Filed Oct. 30, 1967, Ser. No. 679,067
Claims priority, application France, Nov. 3, 1966, 82,316
Int. Cl. G08c *19/32*
U.S. Cl. 340—184 5 Claims



A monitoring device comprising transmitters each of which measures a signal which corresponds to a value involved in the installation to be monitored. The transmitters can be selectively connected to a set of receivers

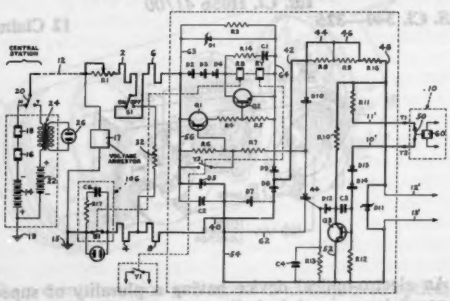
for recording a selected one of said signals. A switching means connected to the transmitters and receivers is actuated by individual switching elements respectively provided on each transmitter and receiver. The individual switching elements can be controlled by transferable control devices such as plugs whereby the transfer of a plug connects a given transmitter to a given receiver, the switching means being actuated by the individual switching elements of the transmitter and receiver for establishing the appropriate connection.

3,562,729
TWO WIRE MV./V. TRANSMITTER
Edward T. E. Hurd III, Willingboro, N.J., assignor to Honeywell Inc., Minneapolis, Minn., a corporation of Delaware
Filed Sept. 8, 1967, Ser. No. 670,822
Int. Cl. G08c *19/04*
U.S. Cl. 340—210 **10 Claims**



There is disclosed a voltage (millivolts)-to-current transducer which transmits a current signal to a remote central station, which includes a power supply for a utilization device at the remote location, over a two-wire transmission line. The transmission line carries both the signal current from the transmitter to the remote station and the total power supply for the transmitter.

3,562,730
ALARM CONTROL UNIT AND TEST CIRCUIT THEREFOR
Frederick G. Hill, Yonkers, N.Y., Lawrence H. Kelly, Little Silver, N.J., annd Joseph Li Calsi, East Meadow, N.Y., assignors to American District Telegraph Company, Jersey City, N.J., a corporation of New Jersey
Filed Apr. 29, 1968, Ser. No. 724,704
Int. Cl. G08b *13/00, 29/00*
U.S. Cl. 340—214 **7 Claims**

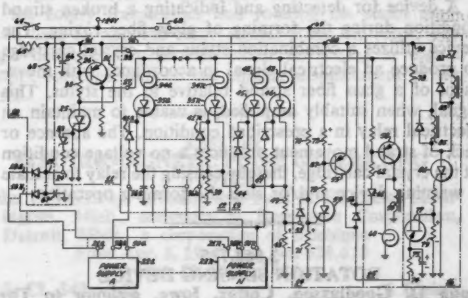


A protection equipment testing unit for contemporaneously ascertaining the operability of a multiplicity of pieces of protection equipment both from within a protected premises and from a remotely located place while testing from the remote place. The protected premises and the remote place are electrically connected by a conductive line. The conductive line is selectively connected to a first and a second source of direct current at the remote place. An intrusion simulator is located within the protected premises and may be activated by an individual at the remote place. A first alarm-test indicator is located within the remote place and a second alarm-test indicator is located within the protected premises. Both the first and second indicators are coupled to the piece of protection equipment. By activating the intrusion simulator, the piece of protection equipment responds to the simulated intrusion and sends a signal to both of the indicators. This will allow the protected premises and the remotely located place to contemporaneously ascertain whether the piece of protective equipment is in order.

3,562,731
SURFACE WATER DETECTOR
Charles Jui-Cheng Hsu, P.O. Box 460, Grand Central Station, New York, N.Y. 10017
Filed Apr. 1, 1968, Ser. No. 717,664
Int. Cl. G08b *21/00*
U.S. Cl. 340—235 **2 Claims**

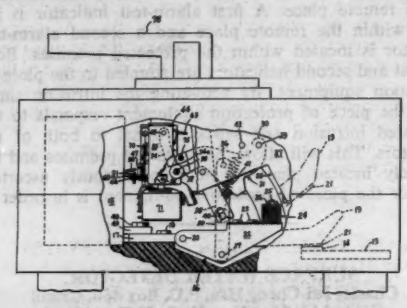
An automatically operative alarm for warning persons of the presence of advancing water in a room such as a boiler or engine room wherein rising water would be capable of damage; the alarm comprising an electric switch that is closable by the expansion of a capsule containing a substance expandable in water, the switch closing a circuit to an audible or visual alarm.

3,562,732
FAULT REGISTER AND SEQUENCER FOR USE WITH A PLURALITY OF POWER SUPPLIES
Luther L. Genuit, Scottsdale, Ariz., assignor to General Electric Company, a corporation of New York
Filed Oct. 17, 1968, Ser. No. 768,437
Int. Cl. G08b *23/00*
U.S. Cl. 340—248 **12 Claims**



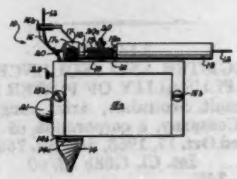
A fault register and sequencer indicates when any one of a plurality of power supplies develops a fault. The register indicates which power supply has developed the fault and the type of fault developed and provides a signal which causes the sequencer to shut down the power supplies in a desired sequence.

3,562,733
ELECTRIC CIRCUIT BREAKER WITH IMPROVED TRIP ALARM
Frank H. Murphy, Hartford, and Henry E. S. Owen, Avon, Conn., assignors to General Electric Company, a corporation of New York
Filed Dec. 15, 1967, Ser. No. 691,042
Int. Cl. G08b 21/00
U.S. Cl. 340—253 4 Claims



A trip alarm for signalling only when the circuit breaker trips due to overload currents, including a first set of contacts closed by the tripping action of a trip unit and a second set of contacts closed by the tripping movement of the breaker mechanism; the closing of these contacts completes the circuit to a relay which actuates the trip alarm and also closes contacts by-passing the first set of contacts to maintain the circuit through the trip alarm even though the trip alarm returns to the untripped condition.

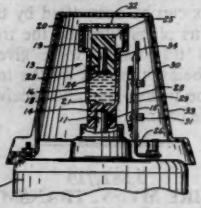
3,562,734
STOP MOTION DEVICE
George H. Hotchkiss, Kansas City, Mo., assignor to Certain-Teed Products Corporation, Ardmore, Pa., a corporation of Maryland
Filed Oct. 20, 1967, Ser. No. 676,788
Int. Cl. G08b 21/00
U.S. Cl. 340—259 2 Claims



A device for detecting and indicating a broken strand condition during the forming of glass fiber roving. The device utilizes a combination stylus and crystal cartridge to produce an electrical signal in accordance with movement of a glass fiber strand relative to the stylus. This signal, when suitably amplified, is usable to maintain an electrical relay in a prescribed condition. The absence or lack of strand movement produces a no voltage condition at the crystal cartridge, thereby causing the relay to actuate a warning device and/or stop the forming operation.

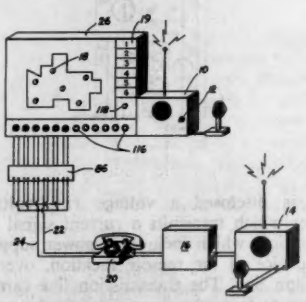
3,562,735
ROTATION SENSING DEVICE
John D. Goodlaxson, Colfax, Iowa, assignor to The Maytag Company, Newton, Iowa, a corporation of Delaware
Int. Cl. G08b 21/00; H01h 9/00
Filed Dec. 20, 1967, Ser. No. 692,009
U.S. Cl. 340—271 11 Claims

A rotation sensing device including a housing attachable to a rotatable member and containing an actuation member in the form of a magnet movable between first and second positions with a change in the rotation of the rotatable member. Means, in the form of a reed switch



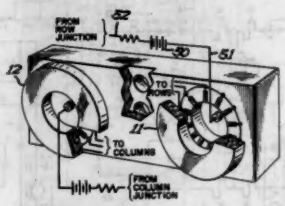
positioned adjacent to the housing, is operable for providing a signal indicating rotation of the rotatable member.

3,562,736
CODE RESPONSIVE MONITORING SYSTEM
Paul A. Nelson, South Bend, Ind.
(465 N. Le Sueur, Mesa, Ariz. 85201)
Filed Oct. 22, 1965, Ser. No. 501,481
Int. Cl. H04q 9/10, 9/12
U.S. Cl. 340—313 6 Claims



In a radio alerting system an impulse signal generating means activated by energization of the system to energize relay means that in turn operates indicating means to inform an alarm station operator that the alert signal has been received by a remote station.

3,562,737
ELECTRO-OPTICAL DEVICE
Norman M. Wiederhorn, Golden Valley, and Charles Robert Lane, Northfield, Minn., assignors to G. T. Schjeldahl Company, Northfield, Minn., a corporation of Minnesota
Filed Dec. 19, 1967, Ser. No. 691,779
Int. Cl. H05b 41/00
U.S. Cl. 340—325 12 Claims



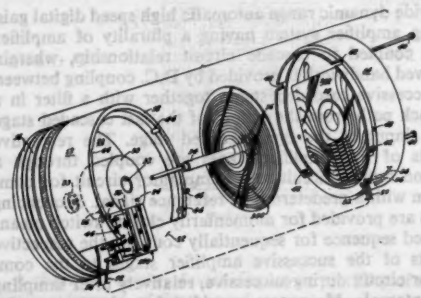
An electro-optical device having a plurality of superimposed layers, and including a central panel having a plurality of discrete bores extending therethrough to form display cells for receiving and retaining an electro-optical

substance, which substance may include an ionizable gaseous fill, and a plurality of scanning electrodes on opposite sides of said cells for applying an electrical field through each of said cells. The display cells are arranged in groups of rows and columns, and scanning electrodes extend beyond the area of the cells and into a remote chamber, wherein a gap is formed in the continuity of each of the scanning electrodes. These gaps are arranged in two groups or banks, one group for the rows, the other for the columns. A magnetic drive means is provided to generate a field which is coupled to the gaps in the individual groups, and means are provided for energizing the magnetic means to intermittently step an arc formed in the gaps from one gap pair to another gap pair along the gap axis.

3,562,738
VARIABLE ALARM CONTROL DEVICE
Herbert A. Raschke, Greenbrae, Calif., assignor to E. D. Bullard Company, Sausalito, Calif.
Filed July 24, 1968, Ser. No. 747,248
Int. Cl. G08b *3/00*
U.S. Cl. 340—329 4 Claims

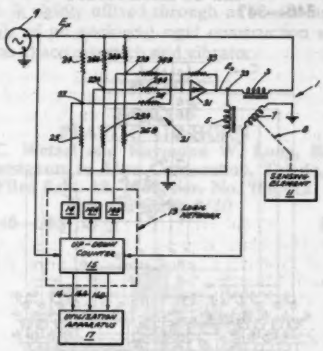
A variable or adjustable code wheel for a back-up alarm of the type that has a pair of electrical contacts and an actuator arm operatively associated with the contacts and in bearing contact with the periphery of the code wheel. The code wheel is formed of two disks that can be rotated relative one another to vary the composite periphery of the code wheel. Variation of the composited periphery of the code wheel effects variation of the sound pattern produced by the back-up alarm.

3,562,739
ANALOG TO DIGITAL CONVERTER
Gerald F. Frank, Normal, Ill., and Rene M. Iadipaolo, Hawthorne, Calif., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn., a corporation of Delaware
Filed Oct. 21, 1965, Ser. No. 499,398
Int. Cl. G08c *9/06*
U.S. Cl. 340—347 2 Claims



The present invention is directed to an improved optical code wheel for use in an analog to digital converter wherein the code wheel includes a plurality of concentric tracks each having binary coded decimal information and where each concentric track has opaque and translucent portions representing off and on states of a particular weighted numerical value and with all but one of the concentric tracks grouped together in pairs and with a first one of each pair of tracks representing the same weighted numerical value as the second one of each pair of tracks and with the first ones of each pair of tracks physically displaced to lead the second one of each pair of tracks so that alternate ones of the first and second ones of each pair of tracks may be preset relative to the other. An output signal is derived by switching between the information represented by the first ones of each pair of tracks and the second ones of each pair of tracks. The invention also includes an improved lamp assembly including a flexible member and with a plurality of individual adjustment means operating against the flexible member to individually adjust the position of light sources.

3,562,740
ROTARY TRANSFORMER NULLING SYSTEM
Benjamin M. Watkins, Lodi, N.J., assignor to The Bendix Corporation, a corporation of Delaware
Filed Feb. 13, 1967, Ser. No. 615,791
Int. Cl. H03k *13/04*; G05g *19/00*
U.S. Cl. 340—347 6 Claims



An apparatus including a follow-up having no moving parts for providing an output corresponding to the angular displacement of the rotor of a rotary transformer, such as a synchro or resolver, comprising a logic network connected to the rotor of the rotary transformer and receiving error signals therefrom and providing an output corresponding to the angular displacement of the rotor from a predetermined position, and the output of the logic network being applied to the stator windings of the rotary transformer and rotating the stator magnetic field to null the error signals from the rotor. The logic network may provide either an analog or digital output corresponding to the angular displacement of the rotor.

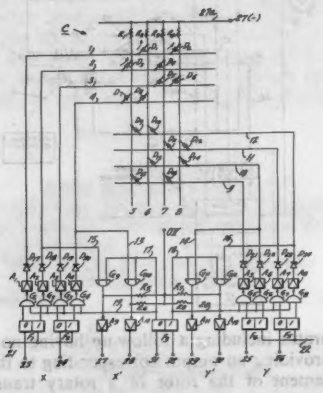
3,562,741
ELECTROMAGNETIC PULSE GENERATING SYSTEM
John C. McEvoy, Livonia, and Paul R. Hoffman, Farmington, Mich., assignors to Burroughs Corporation, Detroit, Mich., a corporation of Michigan
Filed Apr. 5, 1967, Ser. No. 628,670
Int. Cl. G08c *9/04*
U.S. Cl. 340—347 6 Claims

A system utilizing a single transducer and a mechanically translatable member for generating a plurality of electrical timing signals representing discrete positions of the translatable member including a reference or bench mark signal. The bench mark signal is bipolar and the remaining timing signals are essentially unipolar. The polarity of the signals is dependent upon the shape of

projections on the periphery of a rotating disc. The bipolar signal is generated from a substantially rectangular

projection, and the unipolar signal is generated from a sawtooth-shaped projection.

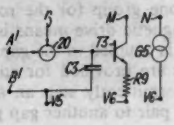
3,562,742
REVERSIBLE CODE CONVERTER
Tadao Abe, Tokyo, Japan, assignor to Nippon Electric Company Limited, Tokyo, Japan
Filed Apr. 25, 1967, Ser. No. 633,597
Claims priority, application Japan, May 4, 1966, 41/28,208
Int. Cl. H03k *13/252*
U.S. Cl. 340—347 **4 Claims**



A bidirectional code converter incorporating code conversion means for converting codes from a first binary code format to a second binary code format. For example, an N bit binary code format may be converted to a $N+M$ bit binary code format where M may be any number equal to or greater than 1. Settable switch means are provided for permitting code conversion in a first direction, i.e., from any code to an $N+M$ code and which may be reset to provide code conversion in the reverse direction, i.e., from an $N+M$ code to an N code. The settable switch means, when set for code conversion in the first direction inhibits code direction in the reverse direction.

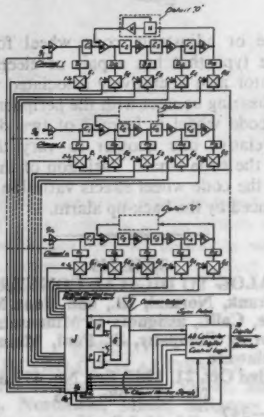
3,562,743
NON-LINEAR DECODER AND A NON-LINEAR ENCODER EMPLOYING THE SAME
Claude Paul Henri Lerouge, Montgeron, and Didier Charles Strube, Garches, France, assignors to International Standard Electric Corporation, New York, N.Y., a corporation of Delaware
Filed Jan. 16, 1968, Ser. No. 698,312
Claims priority, application France, Jan. 26, 1967, 92,653
Int. Cl. H03k *13/14*
U.S. Cl. 340—347 **6 Claims**

A shift register stores the n digits of a binary number. A first decoder decodes the m most significant digits to produce 2^m first signals and a second decoder decodes the $(n-m)$ least significant digits to produce $2^{(n-m)}$ second signals. Each of $2^{(n-m)}$ current generators is activated by a different one of the second signals and each 2^m gate means is controlled by a different one of the first signals to couple the activated current generator to one



of a pair of latter attenuators. An additional current generator is coupled under control of the most significant digit to one of the pair of latter attenuators. The analog output is present between the outputs of the two latter attenuators. A feedback comparison encoder employs the above decoder to provide a non-linear encoder.

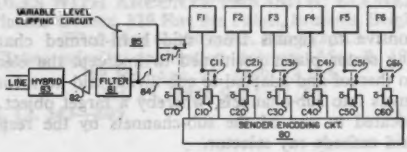
3,562,744
AMPLIFIER SYSTEM
Donald L. Howlett, Houston, Tex., assignor to Texaco Inc., New York, N.Y., a corporation of Delaware
Filed Dec. 24, 1968, Ser. No. 786,569
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 **45 Claims**



A wide dynamic range automatic high speed digital gain ranging amplifier system having a plurality of amplifier stages coupled in cascade circuit relationship, wherein improved bandwidth is provided by D.C. coupling between the successive cascaded stages together with a filter in a feedback path from the output of the last cascaded stage to the input of the first cascaded stage. The respective outputs of the amplifier stages are coupled through a common output circuit to a comparator circuit for comparison with a predetermined reference signal. Sequencing means are provided for momentarily closing switch means in timed sequence for sequentially coupling the respective outputs of the successive amplifier stages to the comparator circuit during successive, relatively brief sampling time intervals. Means are provided for selectively maintaining one of the switch means in its closed position for a holding time interval of longer duration than the sampling time interval when an output signal coupled through said switch means to the common output circuit

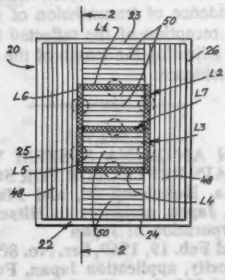
during one of the sampling intervals bears a predetermined relationship to the reference signal. In a preferred embodiment of the amplifier system, the common output circuit is coupled to an analog-to-digital converter and thence to digital recording means for recording signals corresponding to both the instantaneous digital value of the signal at the common output circuit and the gain level to which the signal is amplified, as determined by the one of said switch means selectively maintained closed to pass the signal to the analog-to-digital converter.

3,562,745
SIGNAL TRANSMISSION SYSTEM WITH A VARIABLE LEVEL CLIPPING CIRCUIT
Noel Vlaeminck, Antwerp, Belgium, assignor to Automatic Electric Laboratories, Inc., Northlake, Ill., a corporation of Delaware
Filed Jan. 29, 1968, Ser. No. 701,264
Int. Cl. G08b *1/00*
U.S. Cl. 340—351 **7 Claims**



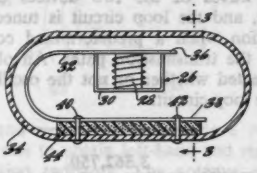
A multifrequency signaling system transmitter having a circuit to clip the multifrequency pulse data signals at a variable level to minimize transients generated upon switching signal sources on and off the transmission line. The clipping level is determined by the voltage applied across a pair of diodes by an exponentially varying voltage of charging or discharging capacitors, varying from a completely short-circuited state when the diodes are conducting in series, to the maximum value of the signal when the diodes are non-conductive. The charging or discharging of these capacitors is controlled by a pair of transistors that are switched by an external circuit applying the signal to the line.

3,562,746
CHARACTER DISPLAY DEVICE EMPLOYING OPTICAL LAMINAS OF LIGHT PIPING ELEMENTS
Mitchell Aron, 38 Ridge Road, Harrington Park, N.J. 07640
Filed Dec. 12, 1968, Ser. No. 783,308
Int. Cl. G08b *5/00*
U.S. Cl. 340—380 **5 Claims**



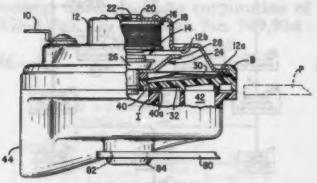
A character display device employs a plurality of optical laminas formed of juxtaposed optical fibers to serve as light guides. Selected fibers in certain ones of the laminas are backed up by selectively operated lamps to display characters at front ends of laminas. The laminas are fabricated into a display device so that they absorb the ambient light impinging on their front ends. Thus, the display device appears black in the absence of internal illumination from the lamps. Illuminated lamina present luminous lines against a black background even in the presence of high ambient light levels.

3,562,747
AUDIBLE SIGNAL DEVICE HAVING ENCLOSED ELECTRICAL VIBRATOR
Irving Levine, 509 Burghley Ave., Ventnor City, N.J. 08406
Filed July 30, 1968, Ser. No. 748,669
Int. Cl. G08b *3/00*
U.S. Cl. 340—384 **2 Claims**



Auditory and vibratory devices each comprising a vibrator affixed to the free end of a cantilevered, curved arm which is rigidly affixed through an insulating barrier to the walls of an enclosing rigid construction and electrical means to activate each said vibrator.

3,562,748
PLASTIC AIR HORN
William C. Wetzel and Raymond W. Long, Bay City, Mich., assignors to Eltra Corporation, Toledo, Ohio
Filed Sept. 18, 1968, Ser. No. 760,412
Int. Cl. G08b *3/10*
U.S. Cl. 340—388 **8 Claims**

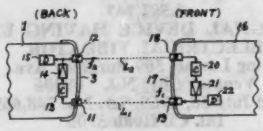


An electric air horn, having a resonating chamber, is formed of two molded thermoplastic resin body portions permanently joined together in a plane by heat. The resonating chamber is connected to a collapsing air chamber formed by a vibratory diaphragm cooperating with one side of the resin portions, the diaphragm being vibrated by an electric motor. The diaphragm and the motor base member are permanently joined together under predetermined tension in a peripheral area by a flange portion of the resin body created by a thermoplastic reform of the flange.

3,562,749
DETECTION SYSTEM USING OSCILLATION WAVES
Tsukushi Uchimoto, 6–30–7 Shimouma, Setagaya-ku, and Shoji Sayama, 1–4–28–216 Aza-Uenohara, Kurumemachi, Kitatama-gun, both of Tokyo-to, Japan
Filed Nov. 19, 1968, Ser. No. 776,870
Claims priority, application Japan, Nov. 20, 1967, 42/74,262
Int. Cl. G01s *9/02*
U.S. Cl. 343—7.5 **3 Claims**

A detection system for detecting an object or objects in response to the change of condition in the paths of oscillation waves; where a plurality of devices, each comprising a frequency converter, and a receiving means and

a sending means respectively connected to the input and output of the frequency converter, configuration consisting of one of the devices, the path over which the devices oscillation wave travels to the second device, the second device, and the path over which the second device's oscillation wave travels to the first device. The



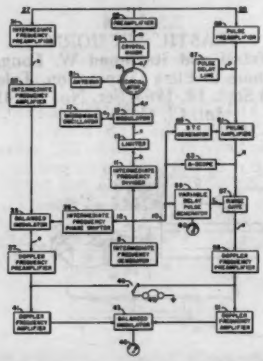
oscillation waves of the two devices are of different frequencies, and the loop circuit is tuned to an oscillation condition when a predetermined condition is met at each of the transmission paths. An object or objects can be detected whether or not the oscillation condition exists in the loop circuit.

3,562,750

CONTINUOUS WAVE CORRELATION RADAR

William Fishbein, Elberon, and Otto E. Rittenbach, Neptune, N.J., assignors to the United States of America as represented by the Secretary of the Army

Filed June 15, 1966, Ser. No. 563,623
Int. Cl. G01s 9/42
U.S. Cl. 343—7.7 **8 Claims**



The continuous wave carrier of this radar is periodically phase modulated. Target echoes are heterodyned with a sample of the phase-modulated transmitted wave and then applied in parallel to an all-range channel and a ranging channel. The all-range channel responds to targets at all ranges and the ranging channel can be used to determine the range of a particular target. The Doppler modulation of a range-gated target in the ranging channel is correlated with the Doppler modulation of the same target in the all-range channel and the setting of the range gate will then indicate the target range. The Doppler signals in both channels can be aurally monitored.

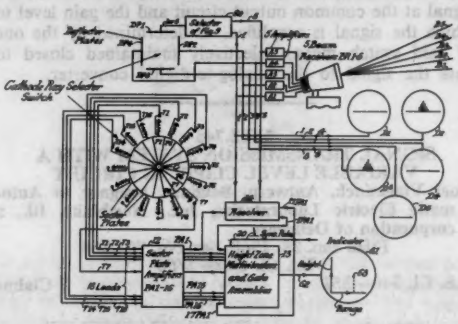
3,562,751

DISTANCE AND DIRECTION RADAR SYSTEM UTILIZING A PLURALITY OF CATHODE RAY TUBES

John Garvon Lewis and William Reginald Savery, Malvern, England, assignors to the Minister of Supply, London, England

Filed Oct. 3, 1952, Ser. No. 312,948
Int. Cl. G01s 7/06
U.S. Cl. 343—11 **12 Claims**

5. A system for determining the elevation of a target reflecting radiation from a radio pulse transmitter comprising, a plurality of radio directional channel forming horns mounted vertically one above the other rotatable as a unit about a vertical axis and having axes of maximum response equally spaced in elevation defining a plurality of elevational range channels, echo-detecting means connected to each horn and a cathode ray selector



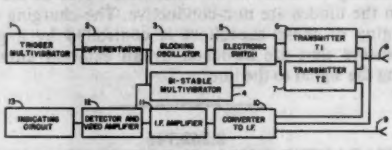
responsive to signals from said horn-formed channels having sector plates positioned to intercept the electron beam thereof and adapted to sub-divide said horn-formed channels into sub-channels, whereby a target object may be located in one of the sub-channels by the response of said cathode ray selector.

3,562,752

DISTANCE INDICATING SYSTEM

Conrad Roeschke, Albuquerque, N. Mex., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Sept. 15, 1953, Ser. No. 382,505
Int. Cl. G01s 9/06
U.S. Cl. 343—13 **6 Claims**



1. For measuring the distance from an observer's position to a radiation-reflecting object, a system of apparatus at the position comprising means for transmitting toward the object pairs of pulses of radiation of different frequencies, the pulses of a pair being separated in time by an interval of adjustable length, means for receiving pulses reflected from the object, means for indicating the time coincidence of transmission of the second pulse of a pair with reception of the reflected first pulse therof and means for adjusting the length of the interval to bring about said coincidence.

3,562,753

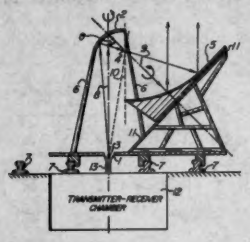
CASSEYRAIN ANTENNA SYSTEM WITH ROTATABLE MAIN REFLECTOR FOR SCANNING

Mitsuo Tanaka, Kokubunji-shi, and Masao Kamimura, Kodaira-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan, a corporation of Japan

Filed Feb. 19, 1969, Ser. No. 800,636
Claims priority, application Japan, Feb. 23, 1968, 43/11,125; June 17, 1968, 43/41,354
Int. Cl. H01q 1/28, 19/10
U.S. Cl. 343—705 **6 Claims**

Antenna system comprising: a radiator fixed to a base, adapted for radiating an electromagnetic wave and having a main radiation axis; a sub-reflector aligned on the main rodiation axis; a main reflector capable of rotating about a reflection axis of the electromagnetic wave from the

sub-reflector and adapted for converting the electromagnetic wave from the sub-reflector into a plane wave and



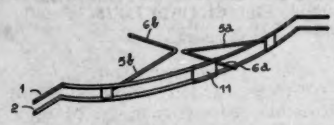
emitting the plane wave into the air or space; and a rotatory mechanism for rotating the sub-reflector and the main reflector.

3,562,754

TELEVISION ANTENNA HAVING V-SHAPED DIPOLES WITH ARCUATE PARASITIC ELEMENTS

Placido Gomez, 329 Rue des Palais, Brussels, Belgium

Filed May 6, 1969, Ser. No. 822,228
Claims priority, application Belgium, May 9, 1968, 58,195; Apr. 25, 1969, 73,261
Int. Cl. H01q *9/44, 21/00*
U.S. Cl. 343—809 6 Claims



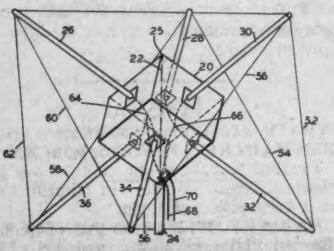
Television antenna wherein the parasitic elements comprise at least two parallel tube means having a curved central portion and two end portions, and wherein the active or driven elements comprise a plurality of straight element pairs lying in a horizontal plane and converging towards a point that lies on a line parallel to the horizontal symmetry axis of said parallel tube means, the elements of at least one active element pair being in alignment along a direction that lies at a relatively small acute angle to the direction of said horizontal symmetry axis of said parallel tube means.

3,562,755

THREE DIMENSIONAL ANTENNA SYSTEM

George A. Bonadio, 12 Public Square, Watertown, N.Y. 13601

Filed July 5, 1968, Ser. No. 742,663
Int. Cl. H01q *21/00, 21/24*
U.S. Cl. 343—853 7 Claims



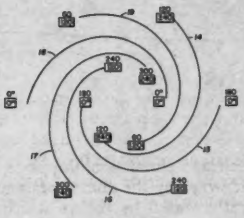
Antenna system comprising six like lineal conductors of equal length and disposed on axes radiating from a common center, each conductor being at an angle of 90 degrees from the adjacent four elements, and switching means in the center area to connect combinations of three adjacent conductors to one lead-in and the remaining conductors to the other lead-in.

3,562,756

MULTIPLE POLARIZATION SPIRAL ANTENNA

Samuel Chung-shu Kuo, San Jose, Calif., and Charles Chung-yeh Liu, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex., a corporation of Delaware

Filed June 3, 1968, Ser. No. 734,001
Int. Cl. H01q *1/36, 3/26*
U.S. Cl. 343—895 12 Claims



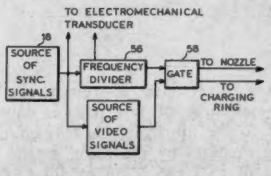
Apparatus and a method of exciting a multi-element log spiral antenna to obtain left-hand and right-hand circular polarization radiation. The antenna elements are interwound in the usual manner in the form of either equiangular or Archimedes spirals terminated at a circumference consistent with a desired radiation pattern. Each element of the antenna receives multiple current mode excitation at the inner terminals. Typically, an antenna excited by first, second, fourth, and fifth mode currents produces both left-hand and right-hand, first and second mode, circular polarized radiation when terminated at an appropriate circumference.

3,562,757

GUARD DROP TECHNIQUE FOR INK JET SYSTEMS

Vincent E. Bischoff, River Grove, Ill., assignor to A. B. Dick Company, Chicago, Ill., a corporation of Illinois

Filed Feb. 28, 1968, Ser. No. 709,004
Int. Cl. G01d *15/18*
U.S. Cl. 346—1 5 Claims



Because of the fairly close spacing between ink drops which is used in the process of ink drop printing, there arises a phenomenon of repulsion between adjacent drops which have similar charges on them, which causes faulty printing. This is overcome by providing guard drops between the charged drops which act as a shield to minimize the adverse affects of drop charge repulsion.

3,562,758

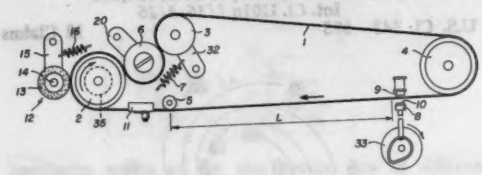
DEVICE AND METHOD FOR MAKING A TEMPORARY INSCRIPTION

Anthony Stephen Ringrose, Geneva, Switzerland, assignor to Ing. C. Olivetti & C. S.p.A., Ivrea, Italy, an Italian company

Filed Mar. 19, 1968, Ser. No. 714,195
Claims priority, application Switzerland, Apr. 25, 1967, 7,377/67
Int. Cl. G01d *9/22*
U.S. Cl. 346—21 9 Claims

The invention provides a device and a method for making temporary inscriptions on a regeneratable support consisting of a band having a dark-coloured surface on which

is applied a layer of light-coloured paste, by pressing selected characters carried by one or more impression members through the paste as the band moves along to expose areas of the dark-coloured surface corresponding to the

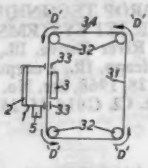


outline of the selected characters, the paste in these areas being chased sideways by the characters and the imprints being subsequently erased by rollers which even out the layer in readiness for a further inscription.

3,562,759
PATTERN FORMING APPARATUS

Arthur Edward Brewster, Cheshunt, England, assignor to International Standard Electric Corporation, New York, N.Y., a corporation of Delaware

Continuation-in-part of application Ser. No. 675,542, Oct. 16, 1967. This application Jan. 11, 1968, Ser. No. 705,590
Claims priority, application Great Britain, Nov. 11, 1966, 50,574/66
Int. Cl. G01d *15/06, 15/12;* **B05b** *5/02*
U.S. Cl. 346—74 **18 Claims**



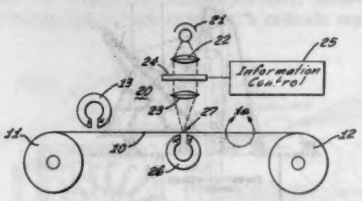
An apparatus is provided wherein a charge pattern, which is representative of information contained in a signal applied to the apparatus, is formed on one side of a recording medium by recording means situated on the other side of said recording medium. Powder particles are applied to the charge pattern to provide a two-dimensional visible image of the charge pattern on the one side of the recording medium. The apparatus includes a cavity housing the powder particles, the rear wall of which is the one side of the recording medium and the front wall is transparent to facilitate viewing. Powder application means include a transparent diaphragm constituting part of the front wall.

3,562,760
THERMOMAGNETIC RECORDING METHOD AND SYSTEM

Stanton H. Cushner and Alan S. Hoffman, Los Angeles, Calif., assignors to The Magnavox Company, Torrance, Calif., a corporation of Delaware

Filed June 13, 1968, Ser. No. 736,697
Int. Cl. G01d *15/12;* **G11b** *7/00*
U.S. Cl. 346—74 **13 Claims**

Magnetic layers comprising particles having several differently oriented easy axes of magnetization and dispersed in the layers at random, are used for providing magnetic recordings using magnetic bias, local thermal treatment and below room temperature coercivity fields for changing the magnetization in locally heated areas. Particularly Co—γ—Fe_2O_3 is suggested to obtain a

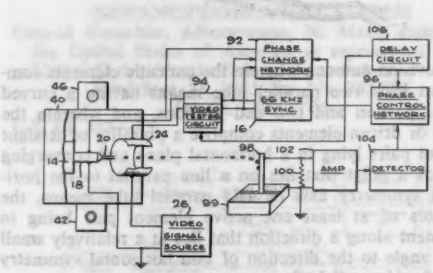


thermomagnetic recording through the combination of magnetizing field and information modulated thermal treatment at temperatures well below the Curie point.

3,562,761
DROP PHASING IN INK DROP WRITING APPARATUS

Joseph J. Stone, Glenview, and Vincent E. Bischoff, River Grove, Ill., assignors to A. B. Dick Company, Chicago, Ill., a corporation of Illinois

Filed Dec. 23, 1968, Ser. No. 786,277
Int. Cl. G01d *15/18*
U.S. Cl. 346—75 **5 Claims**



In an apparatus of the type wherein ink under pressure is applied to a nozzle which is vibrated, and the ink emitted by the nozzle thereafter breaks down into ink drops which are charged in a charging tunnel in response to video signals, means are provided, in accordance with this invention, for sensing whether or not the ink drops are made to occur with the proper phase to assume the proper charge, and if not, to correct the phase of the vibration of the nozzle whereby the ink drop phasing and charging are corrected.

ERRATA

For Class out of order see:
Patent Nos. 3,562,763 thru 3,562,808

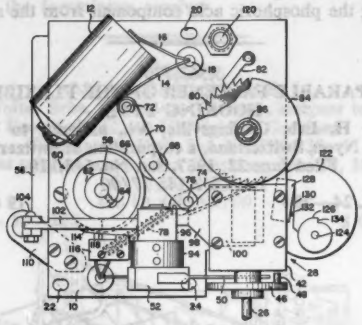
3,562,762
BATTERY OPERATED PRINTOUT

Carl J. Kugler, Philadelphia, Pa., assignor to American Meter Company, Philadelphia, Pa., a corporation of Delaware

Filed Aug. 23, 1968, Ser. No. 754,776
Int. Cl. G01d *9/16*
U.S. Cl. 346—94 **13 Claims**

A printing counter for use in conjunction with gasmeters and the like is arranged to print indications on a circular chart periodically by the use of a spring-loaded

hammer which is released by a motor-driven cam. The motor also controls indexing of the chart, and is controlled, in turn, by a clock-operated switch. Power is supplied by a battery.

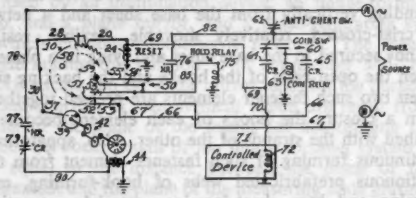


3,562,763

MOTOR-DRIVEN STEPPING TIMER

Earl F. Heppner and Thomas M. Hata, Chicago, Ill., and Herman L. Seiden, deceased, late of Skokie, Ill., by Freida B. Seiden, administratrix, Skokie, Ill., assignors to Bally Manufacturing Corporation, Chicago, Ill., a corporation of Delaware

Filed Dec. 10, 1968, Ser. No. 785,856
Int. Cl. H01h *3/34*
U.S. Cl. 307—141.8 **7 Claims**



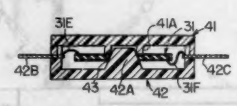
A timing device is provided in which a ratchet wheel is advanced step-by-step by motor-driven crank means to advanced terminal positions and returned by spring means to a starting position, with supervisory switch means actuated in and between such positions for effecting connections in a control circuit for any desired instrumentality and also to govern subcircuits controlling the starting and stopping of the motor means and certain resetting components in timing cycles.

3,562,764

ANNULAR TYPE CERAMIC FILTER DEVICE

Satoru Fujishima, Kyoto-fu, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto-fu, Japan

Filed Oct. 25, 1968, Ser. No. 770,701
Int. Cl. H01v *7/00*
U.S. Cl. 310—9.4 **3 Claims**



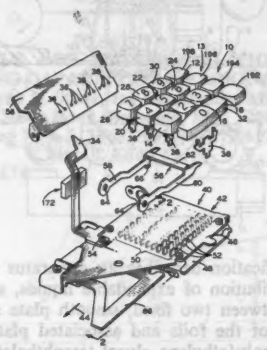
An annular type ceramic filter device. An annular piezoelectric ceramic resonator vibrating in the circular vibration mode has two terminal electrodes on opposite circuits. A lower housing has a supporting member therein supporting the resonator at the central aperture thereof. Inner lead wires extend from the electrodes to the lower housing and then to external lead wires extending from the outside of the wall of the housing. An upper housing covers the lower housing.

3,562,765

RECORDING SYSTEM FOR BUSINESS MACHINES

Francis C. Marino, Huntington, N.Y., assignor to Digitronics Corporation, Albertson, N.Y., a corporation of Delaware

Filed Jan. 16, 1968, Ser. No. 698,302
Int. Cl. G11b *13/00*
U.S. Cl. 340—172.5 **14 Claims**



A data recording system for a keystroke operated business machine for recording the character entries and the functions performed by the machine in a form presentable to a computer and the like. The system includes a plurality of storage means for storing respective signals which are indicative of the character entered into the machine and sampling means for sensing the plurality of storage means signal to produce a recording signal only after the business machine has been mechanically committed to enter the identical character. Hence, a direct correspondence is maintained between the character entered into the machine and the record of such entry.

3,562,766

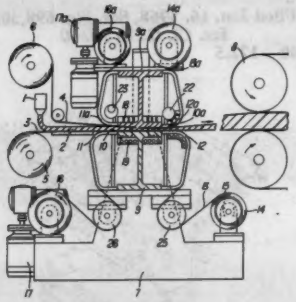
BUCKLE FOR ADJUSTABLE BELT

George A. Dye, 2630 Corvallis Ave., Fort Wayne, Ind. 46809

Continuation-in-part of application Ser. No. 434,889, Feb. 24, 1965. This application Feb. 14, 1969, Ser. No. 799,246
Int. Cl. A44b *13/00, 17/00*
U.S. Cl. 2—321 **7 Claims**

An improved belt buckle is disclosed in two embodiments. The first embodiment is a two piece structure with each piece having one end slotted to receive the bight of a waistband. One piece has a flanged protrusion and the other piece has an aperture to admit the flanged protrusion when the pieces are in one orientation, but which will not allow its removal when they are in a second orientation. The second embodiment is a symmetric three piece structure having two couplings each similar to the one in the first embodiment.

3,562,767
APPARATUS FOR THE CONTINUOUS DISTRIBUTION OF EXPANDABLE LIQUIDS
Michel Mallet and Georges Zeller, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France, a body corporate of France
Filed Nov. 1, 1968, Ser. No. 772,698
Claims priority, application France, Nov. 2, 1967, 126,795
Int. Cl. B29d 7/14
U.S. Cl. 18—4 7 Claims



The specification describes an apparatus for the continuous distribution of expandable liquids, such as polyurethane, between two fixed, smooth plate surfaces. Between each of the foils and associated plate surfaces a film e.g. of poly(ethylene glycol terephthalate) is moved relative to both the foil and plate surfaces, preferably in the opposite direction to the foils. The coefficient of sliding friction between the films and foils is less than 1, preferably less than 0.5.

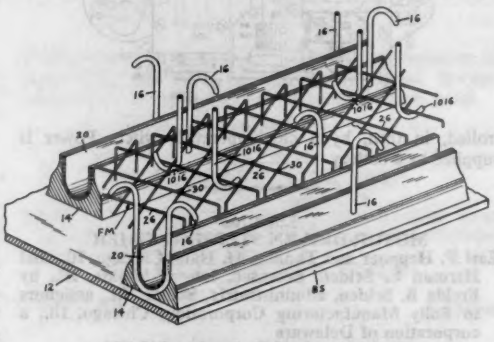
3,562,768
PROCESS FOR PRODUCING FINELY SUBDIVIDED ALKALI METAL POLYPHOSPHATE
Richard Courtney Edquist, Melbourne, Victoria, Australia, and Richard Mark Orpen Maunsell, Toronto, Ontario, Canada, assignors to Electric Reduction Company of Canada Ltd., Toronto, Islington, Ontario, Canada, a Canadian company
Filed Nov. 22, 1966, Ser. No. 598,145
Claims priority, application Australia, Nov. 22, 1965, 66,816/65
Int. Cl. C01b 25/30, 25/38
U.S. Cl. 23—107 11 Claims

The invention provides a process for removing water from aqueous solutions of solids, in particular from heat sensitive solids, by causing such a solution to flow into a fast moving stream of combustion products. The invention is of particular use in controlling temperature sensitive reactions occurring in the solids being dried, which is of especial importance in the production of condensed alkali metal phosphates from orthophosphate liquor.

3,562,769
PROCESS FOR THE PREPARATION OF PHOSPHORIC ACID
Yujiro Sugahara, Tokyo, Hiroyuki Naito, Tsuruoka-shi, Masahide Ogawa, Nakajo-machi, and Jinichi Igarashi, Tsuruoka-shi, Japan, assignors to Mizusawa Kagaku Kogyo Kabushiki Kaisha, Higashi-ku, Osaka, Japan, a corporation of Japan
No Drawing. Filed May 14, 1968, Ser. No. 728,876
Claims priority, application Japan, May 17, 1967, 42/30,846
Int. Cl. C01b 25/22
U.S. Cl. 23—165 10 Claims

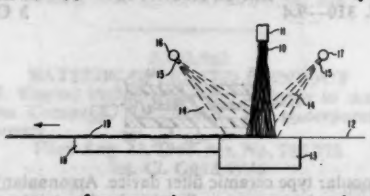
A process for the preparation of phosphoric acid which comprises adding at least one disintegration-preventing agent selected from the group consisting of alkali metal salts and amorphous silica and sulfuric acid to calcium phosphate or phosphate rock, heating the resultant mixture to 100–300° C. to convert the same to perfectly solid, non-disintegrable small masses, and thereafter extracting the phosphoric acid component from the masses.

3,562,770
SEPARABLE FASTENER OF THE FLEXIBLE HOOKING TYPE
George H. Erb, Cuttingsville, Vt., assignor to Velcro S.A., Nyon, Switzerland, a corporation of Switzerland
Filed June 22, 1967, Ser. No. 648,118
Int. Cl. A14b 17/00
U.S. Cl. 24—204 19 Claims



A three level hermaphrodite separable fastener element having a flexible base sheet, a large number of closely spaced flexible and resilient hooks secured to and extending vertically from the base sheet and a network of criss-crossed, relatively movable, flexible, resilient strands secured to the base sheet and lying in a plane between the open ends of the hooks and the backing sheet. When two such fastener elements are pressed together to form a closure the hooks of each element become enmeshed with the strands of the other. Also, apparatus for continuous forming of such fastener element from three continuous prefabricated webs of hook-forming, mesh-forming and base sheet-forming materials respectively. The apparatus includes multiple sets of shaped metal bands which converge with the hook-forming and mesh-forming webs, longitudinally corrugating the webs and holding them in predetermined shape while being heat set and secured to the base-sheet forming web.

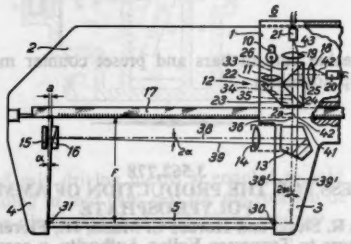
3,562,771
PROCESS FOR PREPARATION OF CONTINUOUS FILAMENT NONWOVEN WEBS
Anton F. Fridrichsen, Nashville, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del., a corporation of Delaware
Continuation-in-part of application Ser. No. 676,815, Oct. 20, 1967. This application Aug. 29, 1968, Ser. No. 778,885
Int. Cl. D02g 1/16; D04h 3/00
U.S. Cl. 28—76 4 Claims



In a process for preparing a nonwoven web wherein electrostatically charged continuous filaments are forwarded by jets to a receiving area which comprises a

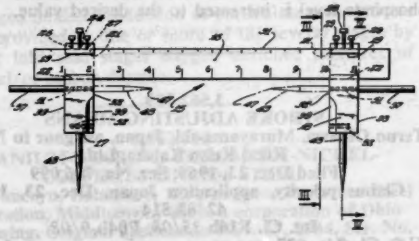
moving foraminous receiver covering a suction laydown zone at least at the point of initial filament deposition, the filaments are treated with water in the forwarding jets and/or in the receiving area to improve the pinning of the web to the foraminous receiver.

3,562,772
MEASURING DEVICE
Walter Erbe, Lohnberg, Germany, assignor to Ernst Leitz G.m.b.H., Wetzlar, Germany
Filed Jan. 9, 1969, Ser. No. 790,038
Claims priority, application Germany, Jan. 19, 1968, P 16 73 969.8
Int. Cl. G01b *5/00*
U.S. Cl. 33—143 **8 Claims**



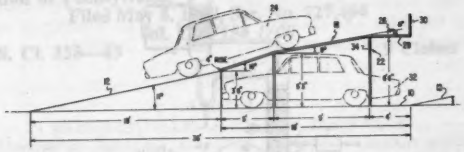
A measuring device including means for determining the position and length of an object to be measured, a measuring scale of which the plane of the graduation or grating is positioned distant from the plane of the measurement, and wherein an image of the grating is projected onto itself by an illumination device, an image-forming system, and a plane mirror, and a pulse-generating system which includes photoelectric receivers. The means for determining the position is in connection with the measuring scale and the plane mirror, and, for the purpose of avoiding errors in measurement which can result from a tilting of the plane of the means for determining the position, the focal length of the image-forming system is made equal to the distance between the plane of the measurement and the plane of the measuring scale grating. Thus, the measuring scale is placed optically in the plane of the measurement.

3,562,773
UNIVERSAL GEOMETRICAL MEASURING INSTRUMENT
George Wilamowski, 4818 Wegg, East Chicago, Ind. 46312
Filed Jan. 6, 1969, Ser. No. 789,128
Int. Cl. G01b *5/00*
U.S. Cl. 33—143 **2 Claims**



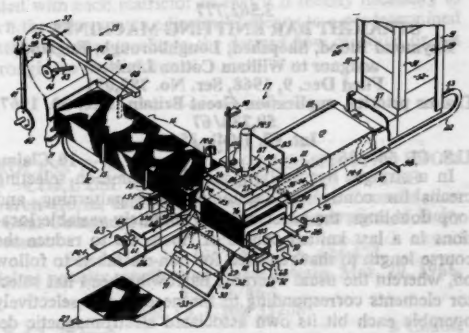
A universal geometrical measuring instrument of the beam-trammel type adaptable to form opposed contact surfaces of various configurations to indicate dimensional distances between similar opposed surfaces of a variety of configurations formed on a workpiece to be measured. The measuring instrument includes a scale or beam having a pair of trammel blocks releasably secured thereto and slidable therealong. Each trammel block includes means forming at least a pair of apertures, with one aperture of the pair disposed normal to the other aperture, and means engageable with the apertures forming contact surfaces, indicating points and scribes to measure dimensional distances of surfaces having a variety of configurations, for example cylindrical surfaces, undercut groove portions, threads, slots and parallel surfaces. Also, means are provided for clamping two or more scales in a series arrangement to provide an extended scale to facilitate measuring exceptionally large workpieces.

3,562,774
APPARATUS FOR INCREASING THE SELF-PARKING CAPACITY OF A PARKING LOT
Wayne B. Stone, Jr., Kensington, Md. (7307 Nevis Road, Bethesda, Md. 20034)
Filed Nov. 1, 1968, Ser. No. 772,617
Int. Cl. E04h *6/10*
U.S. Cl. 52—174 **4 Claims**



The disclosure introduces a new concept in self-parking wherein a plurality of automobiles may be parked on the original surface of a conventional parking lot and a like plurality of automobiles may be parked in superposed relation thereto. A plurality of similarly inclined drive lanes are provided each of which drive lanes merges at one lateral portion thereof with the original parking lot surface and the other lateral portion of which merges with an upper parking level spaced above the level of the original lot surface.

3,562,775
ENVELOPE BOXING METHOD AND APPARATUS
James A. Mullins, Cincinnati, Ohio, assignor, by mesne assignments, to Crown Envelope Corp., Cincinnati, Ohio, a corporation of Ohio
Filed May 9, 1968, Ser. No. 727,942
Int. Cl. B65b *35/30, 57/20*
U.S. Cl. 53—26 **13 Claims**



A method and apparatus for boxing envelopes comprising, in preferred form, the steps of and the means

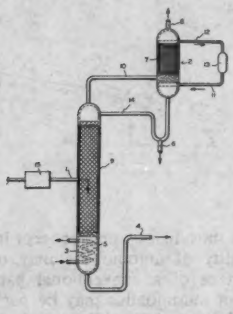
for (a) separating a preselected number of envelopes into a group; (b) positioning a box in inverted position above that group of envelopes; (c) joining the box and the envelope group together to locate the envelopes inside the box; and (d) turning the box over, with the envelopes retained in it, into an upright or carrying position.

3,562,776

LOW TEMPERATURE SEPARATION OF CHLORINE, HYDROGEN CHLORIDE AND CYANOGEN CHLORIDE MIXTURES

Jean Riethmann and Leo Scheck, Basel-Land, Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y., a corporation of New York

Filed Dec. 30, 1968, Ser. No. 787,778
Claims priority, application Switzerland, Jan. 10, 1968, 322/68
Int. Cl. F25j *3/00, 3/08, 1/02*
U.S. Cl. 62—28 2 Claims



A process for the recovery of constituents of a gaseous mixture formed in the catalytic production of cyanogen chloride or in the subsequent trimerization of the cyanogen chloride tc cyanuric chloride in the vapor phase is described which comprises removing from the gaseous mixture consisting substantially exclusively of chlorine, hydrogen chloride and cyanogen chloride the hydrogen chloride by fractional distillation; the residual mixture of chlorine and cyanogen chloride can be recycled into the aforesaid process for producing cyanuric chloride.

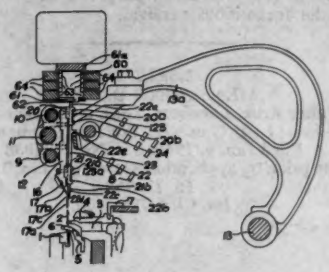
3,562,777

STRAIGHT BAR KNITTING MACHINES

Raymond Blood, Shepshed, Loughborough, England, assignor to William Cotton Limited

Filed Dec. 9, 1968, Ser. No. 782,091
Claims priority, application Great Britain, Dec. 30, 1967, 59,288/67
Int. Cl. D04b *15/04*
U.S. Cl. 66—96 10 Claims

In a straight bar knitting machine, common selecting means for control of fashioning, lace patterning, and loop doublings, the latter being at infinitely variable locations in a last knitted course of rib fabric to reduce the course length to that required for non-rib fabric to follow on, wherein the usual operable narrowing head has selector elements corresponding to the needles and selectively operable each bit its own associated electromagnetic device to render loop transfer points effective on the needles selectively, and wherein the electromagnetic devices are under control of a corresponding number of electric switches which are selectively operable by a variable pattern control means, or under control of a pattern drum or punched chart, or under control of endwise displaceable control bars and preset counter means for the loop doublings.

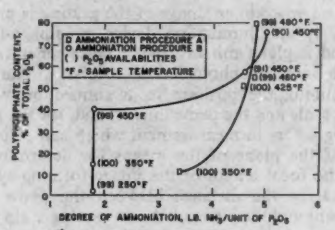


3,562,778

PROCESS FOR THE PRODUCTION OF AMMONIUM POLYPHOSPHATE

Milton R. Siegel and Horace C. Mann, Jr., Florence, Ala., assignors to Tennessee Valley Authority, a corporation

Filed Aug. 7, 1967, Ser. No. 658,962
Int. Cl. C05b *7/00*
U.S. Cl. 71—34 1 Claim


D AMMONIATION PROCEDURE A
O AMMONIATION PROCEDURE B
( ) P_2O_5 AVAILABILITIES
°F = SAMPLE TEMPERATURE
POLYPHOSPHATE CONTENT, % OF TOTAL P_2O_5
DEGREE OF AMMONIATION, LB. NH_3/UNIT OF P_2O_5

AVAILABILITY OF P_2O_5 AS AFFECTED BY AMMONIATION PROCEDURE

Improved process for the production of high-analysis solid and liquid ammonium polyphosphate fertilizers of high P_2O_5 polyphosphate and availability levels from wet-process phosphoric acid and ammonia. The acid is ammoniated so that the bulk of the ammonia is fixed while the polyphosphate level is low and then the polyphosphate level is increased to the desired value.

3,562,779

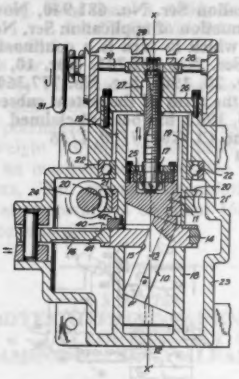
STROKE ADJUSTING MEANS

Teruo Oikawa, Murayama-shi, Japan, assignor to Nippon Kikai Keiso Kaisha, Ltd.

Filed Dec. 23, 1968, Ser. No. 786,099
Claims priority, application Japan, Dec. 23, 1967, 42/82,514
Int. Cl. F16h *35/08*; F04b *9/08*
U.S. Cl. 74—837 1 Claim

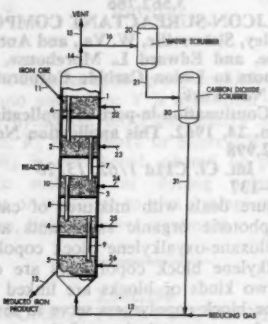
A stroke adjusting mechanism for a controlled volume pump provided between the driving means and the driven member including an eccentric shaft, a cam secured thereto and connected to said driven member and adjusting means connected to one end of the eccentric shaft through

a bearing to displace said eccentric shaft along the axis thereof, and wherein said cam is formed with a cam seat therein adjacent to and aligned with the driven



member and said driving means is coupled to said cam by a key riding in said cam seat for the rotation of said cam and the displacement of said driven member.

3,562,780
TEMPERATURE CONTROL OF IRON ORE REDUCING FLUIDIZED BEDS
Benjamin Eisenberg, Parsippany, N.J., assignor to Esso Research and Engineering Company, a corporation of Delaware
Filed Sept. 5, 1967, Ser. No. 665,369
Int. Cl. C21b *1/02*
U.S. Cl. 75—26 **9 Claims**

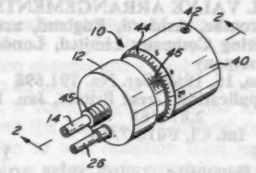


In staged fluidized reduction of particulate ores, process heat is provided in one or more of the several stages by injecting into said stages oxygen enriched mixtures of water and/or carbon dioxide.

3,562,781
TITANIUM-BEARING CHROMIUM-NICKEL-COPPER STAINLESS STEEL
Harry Tanczyn, Baltimore, Md., assignor to Armco Steel Corporation, Middletown, Ohio, a corporation of Ohio
No Drawing. Original application Nov. 17, 1964, Ser. No. 411,730, now Patent No. 3,357,868, dated Dec. 12, 1967. Divided and this application Sept. 18, 1967, Ser. No. 668,687
Int. Cl. C22c *39/54*
U.S. Cl. 75—125 **5 Claims**

Chromium-nickel-copper stainless steel, additionally containing titanium, and of such composition balance, i.e, amount and relation between the several ingredients chromium, nickel, copper and titanium, as to be comparatively ductile and readily workable in one condition of heat-treatment (annealed condition) with a minimum of hardening during such working and yet readily precipitation-hardened within the cold-worked portions thereof by simple heat-treatment at comparatively low temperatures (below the temperature resulting in heat tint and scaling), giving desired articles of ultimate use with hardened surfaces but with other portions of good retained ductility and toughness. More particularly, steel, and articles fashioned thereof, essentially consisting of 10% to 25% chromium-molybdenum, with chromium at least 10% and molybdenum up to 5%; 5% to 20% nickel-manganese, with nickel at least 4% and manganese up to 15%; 1% to 5% copper; .3% to 4% titanium; and remainder substantially all iron.

3,562,782
RESTRICTOR
Edward Zychal, Cornwells Heights, Pa., assignor to Zyco Manufacturing, Inc., Cornwells Heights, Pa., a corporation of Pennsylvania
Filed May 8, 1968, Ser. No. 727,494
Int. Cl. F15d *1/00*
U.S. Cl. 138—43 **9 Claims**

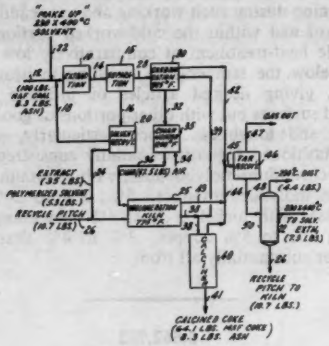


A restrictor having an inlet passage and an outlet passage at one end thereof. The inlet passage communicates with a centrally disposed chamber having a porous compressible element surrounding the chamber. A peripheral annular groove surrounds the porous element and communicates with the outlet passage. Liquid or gas is adapted to flow through the interstices in the porous element into the peripheral annular groove to the outlet passage. A micrometer adjustment means is provided at the other end of the restrictor for accurately controlling the size of the interstices of the compressible element and thereby controlling the flow through said element. A chart may be provided with each restrictor so that it is merely necessary to turn the micrometer adjustment means to a predetermined setting in order to obtain the desired flow of liquid or gas through the restrictor.

3,562,783
PROCESS FOR MAKING AGGLOMERATES FROM COAL USING COAL EXTRACT AS BINDER
Everett Gorin, Pittsburgh, Pa., assignor to Consolidation Coal Company, Pittsburgh, Pa., a corporation of Delaware
Filed Mar. 20, 1967, Ser. No. 624,472
Claims priority, application Great Britain, Mar. 20, 1966, 13,571/66
Int. Cl. C10b *53/08*
U.S. Cl. 201—6 **8 Claims**

A process for making agglomerates from non-caking or weakly caking coals which includes tumbling in a rotary kiln, at an elevated forming temperature, carbonaceous material obtained from the coal feedstock and a binder

also obtained from the coal feedstock to form green agglomerates. The binder contains a nondistillable coal extract fraction which is fluid at the forming temperature in the kiln. The nondistillable coal extract fraction is obtained by solvent extraction of the coal feedstock.



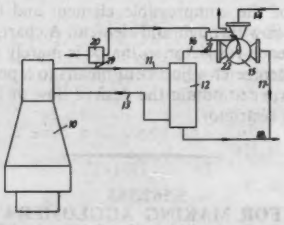
3,562,784

CONTROL VALVE ARRANGEMENTS

John Alfred Lipscombe, Ashford, England, assignor to Walton Engineering Company Limited, London, England, a British company

Filed Jan. 16, 1969, Ser. No. 791,698
Claims priority, application Great Britain, Jan. 18, 1968, 2,874/68
Int. Cl. F01d *7/16*
U.S. Cl. 236—34.5 **11 Claims**

A temperature responsive control valve arrangement for controlling the temperature of a liquid flowing in a conduit comprises an element responsive to the temperature of the liquid in the conduit, a heat exchanger through which at least part of the flow of liquid and at least part of a flow of a secondary fluid flow in heat exchange relationship, a by-pass valve controlling the flow of either the liquid or the secondary fluid through the heat exchanger for regulating the proportions in which the liquid and the secondary fluid flow through the heat exchanger, by dividing the flow therethrough between the heat exchanger and a by-pass passage, the valve being adapted so that the total flow area provided thereby for the flows through the heat exchanger and the by-pass passage is constant for all positions of the valve, and a single-acting piston type servo motor connected to the valve and operated by a servo fluid against the restraint of a spring operating on the piston the pressure of which servo fluid is controlled in dependence on the temperature responsive element in a sense to maintain the temperature of said liquid constant.

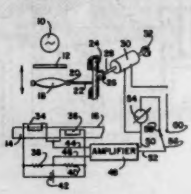


3,562,785

IMAGE ADJUSTING METHOD

Dwin R. Craig, Gaithersburg, Md., assignor to Logetronics, Inc., Alexandria, Va., a corporation of Delaware

Division of application Ser. No. 681,940, Nov. 9, 1967, which is a continuation of application Ser. No. 464,817, June 17, 1965, which in turn is a continuation-in-part of application Ser. No. 101,701, Apr. 10, 1961. This application Nov. 20, 1968, Ser. No. 777,360
The portion of the term of the patent subsequent to Feb. 3, 1987, has been disclaimed
Int. Cl. G01j *1/00, 1/36*
U.S. Cl. 250—204 **6 Claims**



Measurement of the degree of focus of an image wherein a pair of light sensitive elements are exposed to the image. In a first embodiment, a pair of photoconductive elements are physically positioned in different focal planes while, in a second embodiment, a light diffusing medium is associated with one of a pair of photosensitive elements whereby that element will receive only average or background illumination. In both embodiments, as the degree of focus of image is varied, an electrical output signal commensurate with focus will be generated.

3,562,786

ORGANOSILICON-SURFACTANT COMPOSITIONS

Donald L. Bailey, Sistersville, W. Va., and Anton S. Peter, Williamsville, and Edward L. Morehouse, New City, N.Y., assignors to Union Carbide Corporation, a corporation of New York

No Drawing. Continuation-in-part of application Ser. No. 168,527, Jan. 24, 1962. This application Nov. 9, 1966, Ser. No. 592,998
Int. Cl. C11d *1/62, 13/20*
U.S. Cl. 252—137 **1 Claim**

The disclosure deals with mixtures of cationic, nonionic, or amphoteric organic surfactants and additive amounts of siloxane-oxyalkylene block copolymers. The siloxane-oxyalkylene block copolymers are of the type wherein the two kinds of blocks are linked through an Si-C bond. The block copolymers serve to lower the surface tension of aqueous solutions of the organic surfactants thereby increasing the surface active properties of the organic surfactants, such as foaming, wetting, etc.

3,562,787

FILM-FORMING COMPOSITION

Arthur B. Naselow, Philadelphia, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del., a corporation of Delaware

No Drawing. Filed Dec. 22, 1966, Ser. No. 603,732
Int. Cl. C08g *51/26, 51/58*
U.S. Cl. 260—30.2 **2 Claims**

A liquid film-forming composition containing a polyamide-imide polymer in solution in an organic liquid and containing a monofunctional cyclic anhydride, an aromatic or aliphatic aldehyde or a monofunctional isocyanate to prevent the composition from undergoing any undue increase in viscosity before it can be applied to a substrate under normal use conditions in the manufacture of heat-resistant polymeric films and coated articles.

3,562,788

THERMAL DEGRADATION OF POLYOLEFINS

Doyle A. Weemes and Richard L. McConnell, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester N.Y., a corporation of New York

No Drawing. Filed June 8, 1967, Ser. No. 644,493
Int. Cl. C08f *15/04*
U.S. Cl. 260—88.2 20 Claims

A process for the preparation of low viscosity polyolefin waxes by the thermal degradation of high molecular weight olefin polymers in the presence of metal coordination polymerization catalyst residue. The high molecular weight polymer is thermally degraded in the presence of an inactive catalyst residue to produce a low viscosity wax. The thermal degradation is generally carried out at temperatures of about 150 to 400° C. and in the absence of oxygen.

3,562,789

MONOAZODYESTUFFS CONTAINING A 3-N-(β-HYDROXY- α - CYCLOHEXYLOXY OR ARYLOXY) PROPYLAMINO-4-ALKOXY-ALRANOYLANILIDE GROUP

Tsutomu Sasa, Matahiko Asahi, Takanobu Kunihiro, and Hitoshi Takizuka, Ohmuta-shi, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan, a corporation of Japan

No Drawing. Filed Aug. 7, 1967, Ser. No. 658,625
Claims priority, application Japan, Aug. 12, 1966, 41/52,933; Sept. 21, 1966, 41/62,443
Int. Cl. C09b *29/00, 29/36*
U.S. Cl. 260—207 12 Claims

A water-insoluble monoazodyestuff having the formula:

wherein X is a member of the group consisting of chlorine, bromine, cyano and nitro; Y is a member of the group consisting of hydrogen, nitro and alkoxy having 1 to 3 carbon atoms; R_1 is methoxy or ethoxy; R_2 is methyl or ethyl; and R_3 is cyclohexyl, phenyl or p-tolyl. These dyestuffs are suitable for dyeing polyesters, polyamide acetate or triacetate to give dyeings which are fast to sublimation, light and wet treatment.

3,562,790

TRI-COMPONENT POLY-PROPYLENE BLEND AND METHOD

Harry W. Coover, Frederick B. Joyner, and Doyle A. Weemes, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y., a corporation of New Jersey

No Drawing. Continuation-in-part of applications Ser. No. 477,029, Aug. 3, 1965, and Ser. No. 564,049, July 11, 1966. This application June 6, 1968, Ser. No. 734,884
Int. Cl. C08f *29/12, 37/18*
U.S. Cl. 260—876 20 Claims

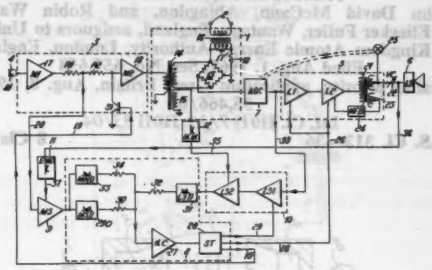
Polyolefinic tri-component blends capable of being molded into products of excellent clarity and resistance to blushing, comprising (A) from about 65 to about 96 percent by weight of a crystalline polymer selected from block- and copolymers of propylene with less than 10% by weight alpha-olefin; (B) from about 2 to about 15 percent by weight of a polymer of ethylene selected from polyethylene and copolymers of ethylene and less than 5% by weight of alpha-olefin of less than ten carbon atoms; and (C) from about 2 to about 20 percent by weight of a terpolymer of ethylene, propylene and up to 10% by weight of an unsaturated hydrocarbon containing at least 1 double bond, said amorphous terpolymer having an ethylene content of 20 to 80%.

3,562,791

LOUDSPEAKER TELEPHONE CIRCUIT ARRANGEMENT

Arthur Herbert Patrick Baker, Sevenoaks, England, assignor to International Standard Electric Corporation, New York, N.Y., a corporation of Delaware

Filed Nov. 15, 1968, Ser. No. 776,136
Claims priority, application Great Britain, Dec. 7, 1967, 55,738/67, 55,739/67, 55,740/67, 55,741/67
Int. Cl. H04m *1/60*
U.S. Cl. 179—1 6 Claims



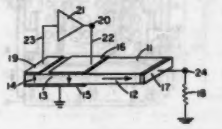
A loudspeaker telephone circuit arrangement providing a hybrid circuit coupled to a telephone line, a microphone transmission channel and a loudspeaker reception channel coupled to an input and an output of the hybrid circuit respectively, a control circuit coupled to the microphone channel and the loudspeaker channel for controlling the transmission to and reception from said telephone line respectively, a microphone switching amplifier and a loudspeaker switching amplifier coupled between the control circuit and the microphone channel and between the control circuit and the loudspeaker channel respectively for biasing the control circuit in opposite directions, an echo detector coupled between the loudspeaker channel and the microphone switching amplifier to prevent loudspeaker signals from being transmitted out on the telephone line, and a breakthrough muting circuit coupled between the hybrid circuit and the loudspeaker switching amplifier to prevent "breakthrough" of signals from said microphone channel to the loudspeaker channel via the hybrid circuit.

3,562,792

PIEZOELECTRIC TRANSFORMER

Don A. Berlincourt, Chagrin Falls, and Lawrence S. Sliker, Shaker Heights, Ohio, assignors to Clevite Corporation, a corporation of Ohio

Continuation-in-part of application Ser. No. 651,875, July 7, 1967. This application June 4, 1968, Ser. No. 734,416
Int. Cl. H01v *7/00*
U.S. Cl. 310—8 8 Claims



A body of ceramic piezoelectric material of the lead titanate, lead zirconate type with an additive of the iron oxide type is provided having regions electroded and

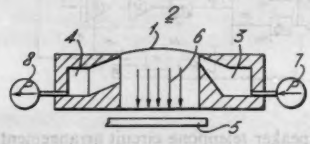
polarized such that the electrical impedances are markedly different. High voltage transformations are obtained in this manner between input and output electrodes. A third set of electrodes coupled to one of the other sets of electrodes enables the transformer to accomplish self-oscillation. In order to enable the body to be supported at more than one vibrational node, the body is caused to vibrate at a harmonic of its fundamental frequency of vibration or more precisely in a mode with one full acoustic wavelength along the ceramic body, or two or more half wavelengths.

3,562,793

EXTERNALLY GAS COOLED WINDOWS FOR PARTICLE ACCELERATORS

John David McCann, Abingdon, and Robin Walter Ellecker Fuller, Wantage, England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Aug. 1, 1967, Ser. No. 657,658
Claims priority, application Great Britain, Aug. 8, 1966, 35,466/66
Int. Cl. H01j 7/26; H01i 33/04
U.S. Cl. 313—36 **8 Claims**



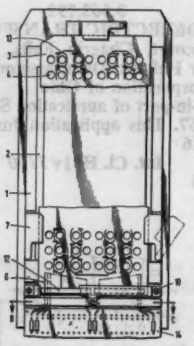
A particle accelerator exit window is provided with means to direct a laminar flow of gas across the external surface of the window.

3,562,794

CASSETTE FOR FIXED-VALUE STORES

Hans-Juergen Richter, Munich, and Josef Zehentbauer, Munich-Pasing, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany, a corporation of Germany

Filed Sept. 5, 1967, Ser. No. 665,613
Claims priority, application Germany, Sept. 13, 1966, S 105,843
Int. Cl. G11c 5/04, 11/06
U.S. Cl. 340—174 **9 Claims**



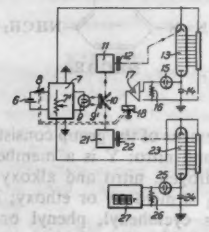
A cassette for fixed-value stores, utilizing transformer cores which are controlled by conductor configurations applied to sheet-like carriers, in which such cassette is constructed for the reception of a stack of such sheet-like carriers, which cassette is completely open on one side and on the opposite side at least partially open for facilitating the removal of carriers, therefrom, a plurality of flexible contacts extending into the interior space of the cassette, corresponding in number at least to the number of sheet-like carriers to be received, which contacts are disposed in staggered relation with respect to one another, parallel to the planes of carriers received therein, by approximately the thickness of one sheet plus the thickness of a contact, perpendicularly to the planes of such carriers by approximately the thickness of one sheet, said contacts having such lengths that they will contact the respective conductor configurations applied to sheet-like carriers inserted therein, and in which the sheet-like carriers may be retained in the cassette by gripping means extending inwardly from edges of the casette, and in which a contact pressure device forming a part of the cassette frame may be provided at the contacted end of inserted carriers, which presses such ends against one another and thereby also against the contacts.

3,562,795

DIGITALLY INDICATING DOUBLE-BEAM PHOTOMETER

Helmuth Frenk, Wetzlar, Germany, assignor to Ernst Leitz G.m.b.H., Wetzlar, Germany

Filed May 22, 1967, Ser. No. 640,102
Claims priority, application Germany, June 2, 1966, L 53,758
Int. Cl. G01j 1/58; G01n 21/38
U.S. Cl. 356—222 **5 Claims**



In a digitally indicating double-beam photometer having at least one photoelectric receiver two saw tooth generators are employed. Each saw tooth generator is responsive to one beam and is controlled by electrical signals corresponding to the light intensity of the beam to which it is attached. The ratio of the electrical values determining the rise time of the saw tooth generators is $1:n$, wherein n represents the light intensity of the comparison beam as measured in digital units. The output signal of the saw tooth generator to the comparison beam controls a relay after having been suitably amplified; the output signal of the saw tooth generator responsive to the measuring beam operates a counter mechanism.

A first embodiment is disclosed in which two photoelectric receivers are employed, one in the path of each beam. Each one of the receivers is connected to one of the saw tooth generators.

A further embodiment is disclosed in which only one photoelectric receiver is employed with the two beams being alternately switchable onto the only receiver. A double throw switch is connected to the receiver and is adapted to connect the receiver to either of the saw tooth generators alternately and synchronously with the switching of the beams.

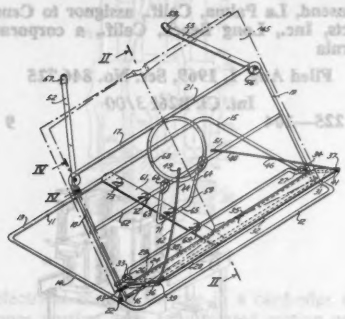
3,562,796

FOLDABLE READING STAND OF ALL WIRE

James J. Jacobson, New York, N.Y., assignor to Wahl Associates, Inc., Long Island City, N.Y.

Filed Oct. 31, 1968, Ser. No. 782,505
Int. Cl. A47b *23/00*
U.S. Cl. 248—456 8 Claims

A foldable reading stand of all wire structure has a base portion of wire structure and a book supporting portion of wire structure rotatably mounted on the base portion. The book supporting portion comprises a book back supporting structure rotatably mounted on the base



portion and a book bottom supporting part rotatably mounted on the book back supporting wire structure.

3,562,797

PRODUCTION OF MONO-OLEFINS

Shengen Hu, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo., a corporation of Delaware

No Drawing. Filed Jan. 9, 1969, Ser. No. 790,161
Int. Cl. B01j *11/40;* C07c *11/04*
U.S. Cl. 260—683.3 11 Claims

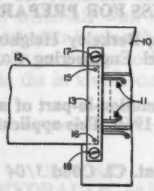
Methods for preparing mono-olefins, useful in the preparation of detergent alkylates, wherein a long chain paraffin feed material is passed in the presence of oxygen at elevated temperatures into effective contact with Type A molecular sieve to thereby result in selective dehydrogenation of the paraffin.

3,562,798

CONNECTOR APPARATUS

Thomas L. Bragg, Jr., Palm Harbor, Fla., assignor to Honeywell Inc., Minneapolis, Minn., a corporation of Delaware

Filed Jan. 29, 1969, Ser. No. 795,015
Int. Cl. H05k *1/12*
U.S. Cl. 339—17 3 Claims



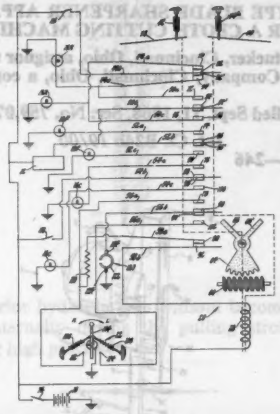
A connector for connecting flat cables to printed circuit boards is shown. The insulation at the end of the cable is removed and the cable is clamped to a base which carries matching conductors thereon whereby connections are made directly between the conductors on the base and the conductors in the cable.

3,562,799

TURN SIGNAL SYSTEM WITH AUTOMATIC DISTANCE CANCELLATION

John E. Creager, Fenton, and George B. Hardenbrook, Jr., Flint, Mich., assignors to General Motors Corporation, Detroit, Mich., a corporation of Delaware

Filed Dec. 5, 1968, Ser. No. 781,572
Int. Cl. B60g *1/24, 1/38*
U.S. Cl. 340—56 3 Claims



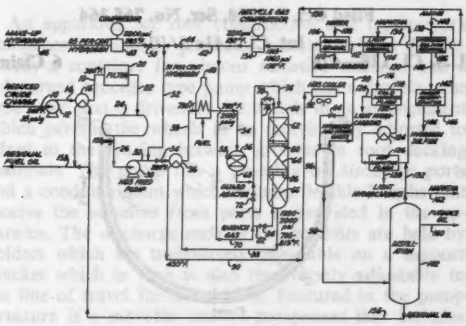
A turn signal system is disclosed which includes a turn signal switch for controlling actuation of one or both armatures of a dual armature relay to energize the appropriate turn signal lamps. One of the relay armatures carries a switch operating gear which is adapted to be coupled to the odometer drive mechanism of the vehicle to open the circuit to the relay and denergize the signal lamps after the vehicle has traveled a predetermined distance.

3,562,800

ASPHALTENE HYDRODESULFURIZATION WITH SMALL CATALYST PARTICLES UTILIZING A HYDROGEN QUENCH FOR THE REACTION

Edgar Carlson, Allison Park, Alfred M. Henke, Springdale, William R. Lehrian, Verona, Joel D. McKinney, Pittsburgh, and Kirk J. Metzger, Verona, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa., a corporation of Delaware

Filed Oct. 25, 1968, Ser. No. 770,625
Int. Cl. C10g *23/02*
U.S. Cl. 208—216 23 Claims



The hydrodesulfurization of a crude oil or a reduced crude containing the asphaltene fraction proceeds at un-

expectedly low temperatures by utilizing a catalyst comprising a Group VI and Group VIII metal on alumina when the catalyst particles are very small and have a diameter between about 1/20 and 1/40 inch and the reaction is quenched with hydrogen.

3,562,801

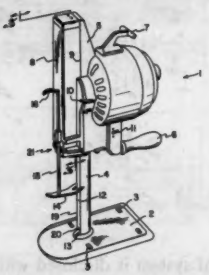
BELT-TYPE BLADE SHARPENER APPARATUS FOR A CLOTH CUTTING MACHINE

Robert G. Stucker, Cincinnati, Ohio, assignor to The Wolf Machine Company, Cincinnati, Ohio, a corporation of Ohio

Filed Sept. 11, 1968, Ser. No. 759,073

Int. Cl. B24b *19/00*

U.S. Cl. 51—246 10 Claims



A pad arrester for an endless belt-type blade sharpener used with a vertical blade cloth cutting machine. The pad arrester prevents the bottom belt's pad from urging the bottom belt into the reciprocating knife blade's path when the blade sharpener apparatus reaches the halfway point of its sharpening cycle, that is, when the blade sharpener bottoms out as it ends its downward stroke and starts its return stroke. Thus, the pad arrester prevents the bottom belt of the blade sharpener from being sliced through and/or the blade from being disfigured as the sharpener apparatus commences its return stroke.

3,562,802

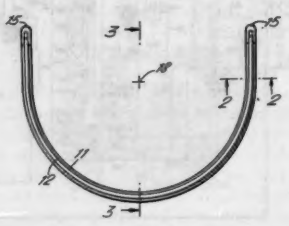
WIRE FRAMES FOR BRASSIERES AND THE LIKE

Robert J. Avis, Horndean, England, assignor to Ketterane Limited, London, England, a British company

Filed Oct. 7, 1968, Ser. No. 765,364

Int. Cl. A41c *3/10*

U.S. Cl. 128—476 6 Claims



The invention relates to a reinforcement frame adapted for use in cups of ladies' brassieres, the frame comprising a single length of resilient wire shaped into substantially U-shaped formation for conforming to the curvature of the lower periphery of the root of a wearer's breast, the wire having a plane surface on one side for presentation towards the body of the wearer and a surface opposed to said one said having a surface portion which projects in a direction away from the plane surface.

3,562,803

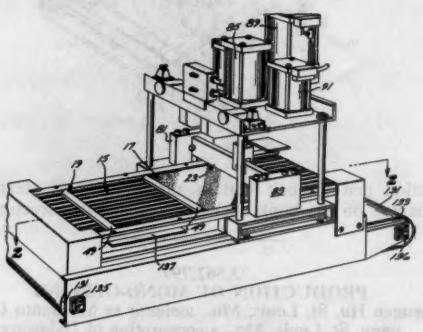
PLATE BREAKING APPARATUS

Joe Townsend, La Palma, Calif., assignor to Centrifugal Products, Inc., Long Beach, Calif., a corporation of California

Filed Aug. 1, 1969, Ser. No. 846,725

Int. Cl. B26f *3/00*

U.S. Cl. 225—104 9 Claims



An apparatus for breaking brittle plates having flexible backing thereon, such apparatus including a conveyor for advancing the plates along a bed in selected increments. The bed is formed with a transverse depression defining a breaking edge and a breaking head is aligned with such depression and is selectively lowered to engage the plate and break it over such edge. Control means is provided for advancing the conveyor the selected increments and then actuating the breaking head to effect breaking thereof over the breaking edge.

3,562,804

LOW BULK VISCOSITY MASTIC COMPOSITIONS AND PROCESS FOR PREPARING SAME

Kenneth W. Powers, Berkeley Heights, N.J., assignor to Esso Research and Engineering Company, a corporation of Delaware

No Drawing. Continuation-in-part of application Ser. No. 550,649, May 17, 1966. This application Aug. 19, 1968, Ser. No. 753,700

Int. Cl. C08d *3/04*

U.S. Cl. 260—85.3 13 Claims

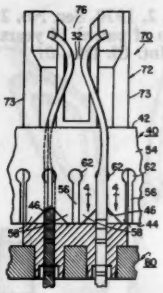
Low bulk viscosity (room temperature flowable) polyisobutylene backbone type mastic compositions which are curable to solid elastomeric vulcanizates are formed by the reaction of C_4 to C_6 conjugated diolefins with a major portion of isoolefin in the presence of a catalyst system comprising an ethyl aluminum dichloride with a halogenated organic promoter, preferably benzyl chloride.

3,562,805

BUS STRIPS AND CONTACTS

Thomas J. Stokes, Philadelphia, Pa., assignor to Elco Corporation, Willow Grove, Pa., a corporation of Delaware

Filed Sept. 12, 1968, Ser. No. 759,343
Int. Cl. H01r 11/22, 13/50, 25/00
U.S. Cl. 339—176 14 Claims



An electrical contact for use in a card-edge connector has a nose portion with a bifurcated section comprising a pair of legs separated by a bifurcating slot. At least one chamfered surface is coined into the contact below the bifurcating slot, and a bus strip is provided with a similar chamfered surface for mating with the chamfered surface on the contact when the bus strip is inserted into the bifurcated slot. An alternative embodiment comprises a card-edge contact which has flat, parallel, uncoined surfaces below the bifurcating slot, and a bus strip which has a contact-receiving slot defined, in part, by inwardly facing projections having contact-engaging surfaces thereon. The bus strip is inserted into the bifurcating slot of the contact with the flat, parallel, uncoined surfaces of the contact positioned within the contact-receiving slot of the bus strip.

3,562,806

RUMEN STABLE MEDICAMENT AND/OR NUTRIENT COMPOSITIONS

Peter M. Grant, Bruzelton Fulkerson, and John W. Mench, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y., a corporation of New Jersey

Filed Sept. 10, 1968, Ser. No. 758,874
Int. Cl. A61k 9/00
U.S. Cl. 424—35 26 Claims

Materials such as medicaments and nutrients that decompose when they are fed orally to ruminants because of their instability in the in vivo rumen environment can be protected from the ruminant environment by effectively coating such materials with special nitrogen-containing cellulosic materials having the ability to resist being degraded in the rumen, but also having the additional ability to dissolve in the in vivo abomasal fluid.

3,562,807

HYDRAULIC JARS

Damon T. Slator, Houston, William T. Lee, Magnolia, and Archie W. Peil, Houston, Tex., assignors to Bowen Tools, Inc., a corporation of Texas

Filed Sept. 20, 1968, Ser. No. 767,905
Int. Cl. E21b 1/06
U.S. Cl. 175—297 9 Claims

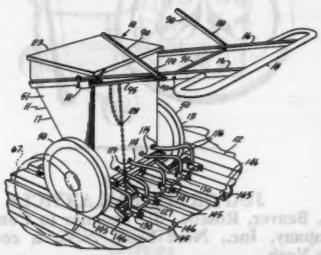
A hydraulic jar for applying a jarring blow to a stuck pipe or fish in a well, wherein means are provided for permitting rapid and substantially unrestrained closing or return of the jar to the pulling position, and wherein means are provided for developing greater pulling forces than with prior hydraulic jars without becoming jammed or stuck internally during the pulling stroke, even in wells having high pressures.

3,562,808

PUMP AND WHEELED DISPENSER FOR VISCOUS FLUIDS

William J. Whitley, Jr., Sanford, Fla., assignor to Julien P. Benjamin Equipment Company, Jacksonville, Fla., a corporation of Florida

Filed Oct. 8, 1968, Ser. No. 765,775
Int. Cl. A01c 15/00
U.S. Cl. 222—177 3 Claims

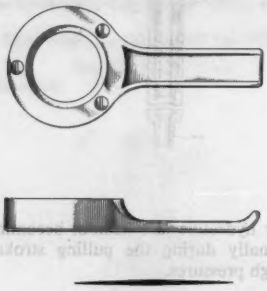


An apparatus for roof construction and repair work comprises a manually propelled wheeled vehicle that includes a container for viscous adhesive material and a submerged squeegee type pump which has a flexible vane type rotor that is driven by the wheels in an arrangement which permits the wheels to be individually adjusted to adapt to the spacing between grooves in roof decking materials. The pump has a plurality of discharge ports and a conduit system which includes flexible lengths that receive the adhesive from ports is provided in the apparatus. The discharge ends of the conduits are held by holders which are transversely adjustable on a support bracket which in turn is also transversely adjustable to the line of travel for the vehicle. Featured in the pump structure is a movable control component that includes a valve member and a vane depressing element which is arranged to permit relief of the pressure at the discharge side of the pump when the valve is moved to the closed position.

DESIGNS

FEBRUARY 9, 1971

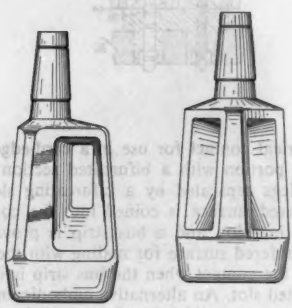
219,861
HANDLE ATTACHMENT FOR DOOR KNOB
Lorenzo Dow Coffman, 6700 Oak Ave., Folsom, Calif. 95630
Filed June 13, 1969, Ser. No. 17,689
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—138



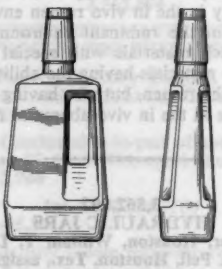
219,862
BACKPLATE AND RING COMBINATION
James R. Deadrick, Winston-Salem, N.C., assignor to Stewart-Warner Corporation, Chicago, Ill., a corporation of Virginia
Filed Dec. 22, 1969, Ser. No. 20,755
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—158

219,863
JUG OR SIMILAR ARTICLE
Ted L. Beaver, Roselle, Ill., assignor to Continental Can Company, Inc., New York, N.Y., a corporation of New York
Filed Feb. 2, 1970, Ser. No. 21,201
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—40

219,864
JUG OR SIMILAR ARTICLE
Ted L. Beaver, Roselle, Ill., assignor to Continental Can Company, Inc., New York, N.Y., a corporation of New York
Filed Feb. 2, 1970, Ser. No. 21,203
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—42



219,865
JUG OR SIMILAR ARTICLE
Ted L. Beaver, Roselle, Ill., assignor to Continental Can Company, Inc., New York, N.Y., a corporation of New York
Filed Feb. 2, 1970, Ser. No. 21,213
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—42



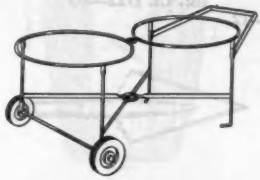
219,866
JUG OR SIMILAR ARTICLE
Ted L. Beaver, Roselle, Ill., assignor to Continental Can Company, Inc., New York, N.Y., a corporation of New York
Filed Feb. 2, 1970, Ser. No. 21,214
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—42

219,867
CONTAINER FOR LIQUIDS
Karl H. Reimer, Lombard, Ill., assignor to Container Corporation of America, Chicago, Ill., a corporation of Delaware
Filed July 29, 1969, Ser. No. 18,458
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—175

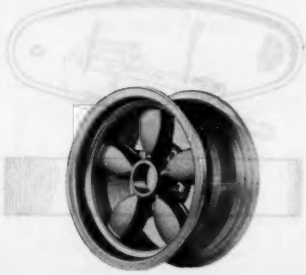
219,868
DISPLAY BOX FOR AN ELECTRIC SHAVER
Alfred W. Madl, Glendale, and David C. Anderson, Milwaukee, Wis., assignors to John Oster Manufacturing Co., Milwaukee, Wis., a corporation of Wisconsin
Filed Dec. 19, 1969, Ser. No. 20,578
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D9—233

219,869
CARTON FOR AN AUTOMOTIVE AIR FILTER
Robert J. Offer and Eugene J. Samalon, Racine, Wis., assignors to Tenneco Inc., Racine, Wis., a corporation of Delaware
Filed Jan. 9, 1970, Ser. No. 20,854
Term of patent 14 years
Int. Cl. D9—*06*
U.S. Cl. D9—250

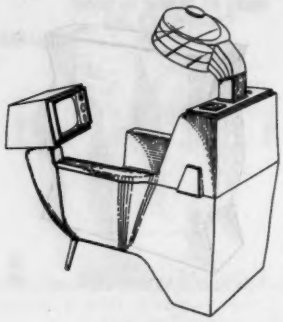
219,870
GARBAGE CAN RACK
Jerry L. Stover, 5607½ S. Youngs Blvd., Oklahoma City, Okla. 73108
Filed Jan. 29, 1970, Ser. No. 21,146
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D14—3



219,871
WHEEL
Thomas B. Griffith, San Carlos, Calif., assignor to American Racing Equipment, a corporation of California
Continuation-in-part of design applications Ser. No. 12,162, May 31, 1968, and Ser. No. 16,261, Mar. 17, 1969. This application July 24, 1969, Ser. No. 19,546
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D14—30

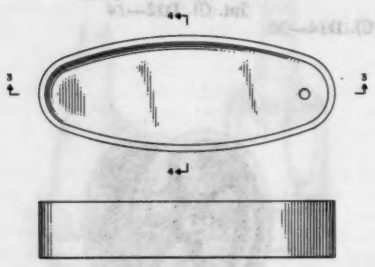


219,872
COMBINED CHAIR, HAIR DRYER AND TELEVISION VIEWER
Reid S. Larsen, 4436 Illinois Ave., Fair Oaks, Calif. 95628
Filed Apr. 15, 1969, Ser. No. 16,749
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D15—1

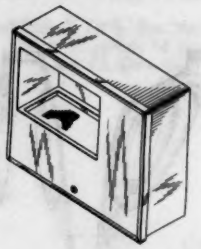


219,873
ARROWHEAD
William John Ritchie, P.O. Box 359, Chapleau, Ontario, Canada
Filed Sept. 30, 1969, Ser. No. 19,350
Claims priority, application Canada June 12, 1969
Term of patent 14 years
Int. Cl. D22—*03*
U.S. Cl. D22—12

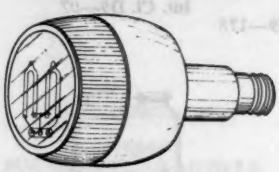
219,874
BATHTUB
Jack A. Goodall, Dallas, Tex., assignor to Venetian Marble Company, Dallas, Tex., a corporation of Texas
Filed July 12, 1968, Ser. No. 12,722
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55



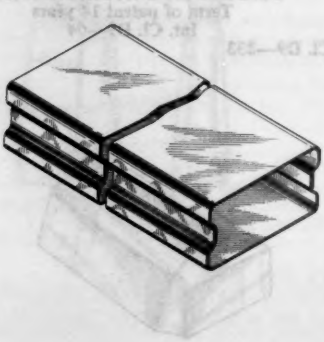
219,875
HAND DRYER
Robert W. Lester, Manhasset, N.Y., assignor to Lestron International Corporation, Jamaica, N.Y.
Filed July 8, 1969, Ser. No. 18,110
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—74



219,876
FLASH TUBE
Jean René-Marie Girard, Place de la Vigne aux Loups, 91 Longjumeau, France
Filed Aug. 25, 1969, Ser. No. 18,842
Claims priority, application France Feb. 27, 1969
Term of patent 14 years
Int. Cl. D26—*01*
U.S. Cl. D26—8

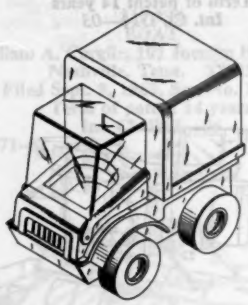


219,877
RAIL FOR A HIGHWAY BARRIER
Ted E. Thompson, Center Valley, Pa., assignor to Bethlehem Steel Corporation, a corporation of Delaware
Filed Sept. 30, 1968, Ser. No. 13,785
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D28—1



219,878
RACK FOR JEWELRY OR OTHER ARTICLES
Gladys Flores Rowland, 1327½ N. Hayworth Ave., Los Angeles, Calif. 90046
Filed Sept. 29, 1969, Ser. No. 19,333
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D33—3

219,879
TOY TRUCK
Robert K. Ostrander, Jr., Morrisville, Pa., assignor to J. Chein & Company
Filed May 14, 1969, Ser. No. 17,147
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—15

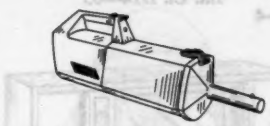


219,880
TRAY OR SIMILAR ARTICLE
James Lloyd Thrush, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio, a corporation of Delaware
Filed Jan. 13, 1970, Ser. No. 20,907
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D36—2

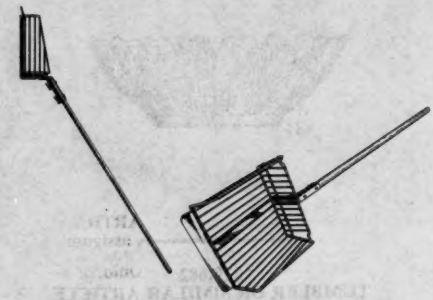
219,881
BOWL OR SIMILAR ARTICLE
James Lloyd Thrush, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio, a corporation of Delaware
Filed Jan. 13, 1970, Ser. No. 20,908
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D36—2

219,882
TUMBLER OR SIMILAR ARTICLE
James Lloyd Thrush, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio, a corporation of Delaware
Filed Jan. 13, 1970, Ser. No. 20,909
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D36—8

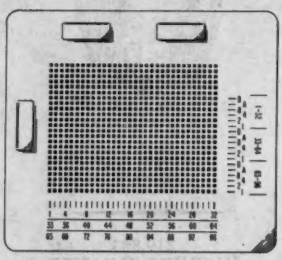
219,883
VACUUM CLEANER
Rudolph Bernard Zijlstra, Drachten, Netherlands, assignor to United States Philips Corporation
Filed Sept. 16, 1969, Ser. No. 19,160
Claims priority, application Switzerland Mar. 20, 1969
Term of patent 14 years
Int. Cl. D15—*07*
U.S. Cl. D49—13



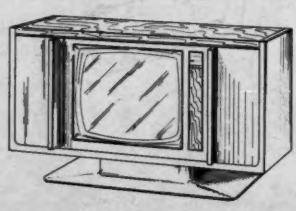
219,884
STALL CLEANER
Suzanne H. Patton, Cincinnati, Ohio, assignor to Bumzee, Inc., Cincinnati, Ohio, a corporation of Ohio
Filed Aug. 4, 1969, Ser. No. 18,523
Term of patent 7 years
Int. Cl. D7—*99*; D8—*02*
U.S. Cl. D49—26



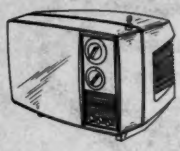
219,885
GAUGE FOR DOCUMENT CARDS
Lonald L. Amundson, Beryl D. Bergschneider, and Clarence J. Kellerman, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y., a corporation of New York
Filed June 27, 1969, Ser. No. 17,909
Term of patent 14 years
Int. Cl. D10—*11*
U.S. Cl. D52—6



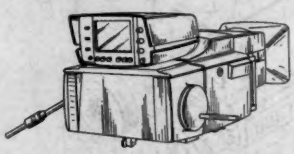
219,886
TELEVISION RECEIVER OR SIMILAR ARTICLE
Marlan Howard Polhemus, Chicago, Ill., assignor to RCA Corporation, a corporation of Delaware
Filed June 2, 1969, Ser. No. 17,474
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4



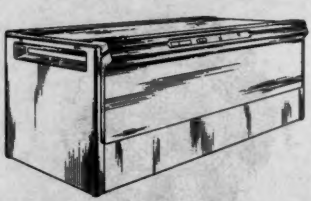
219,887
TELEVISION RECEIVER OR SIMILAR ARTICLE
Joseph Horzick, West Chicago, Ill., assignor to Motorola, Inc., Franklin Park, Ill., a corporation of Illinois
Filed Jan. 14, 1970, Ser. No. 20,915
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4



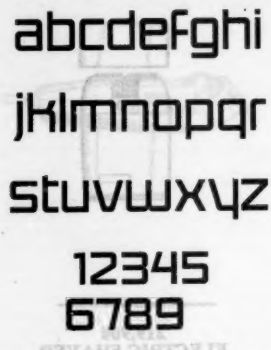
219,888
COLOR TELEVISION CAMERA
Werner Schulze-Bahr, Eindhoven, Netherlands, assignor to United States Philips Corporation
Filed Oct. 30, 1969, Ser. No. 19,845
Claims priority, application Switzerland May 16, 1969
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D61—1



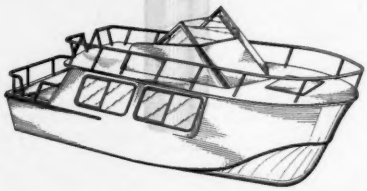
219,889
XEROGRAPHIC PROCESSOR HOUSING
James G. Balmer, Jr., Bloomfield Hills, and Norbert T. Kuypers, Lake Orion, Mich., assignors to Xerox Corporation, Rochester, N.Y., a corporation of New York
Filed Nov. 7, 1969, Ser. No. 20,111
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1



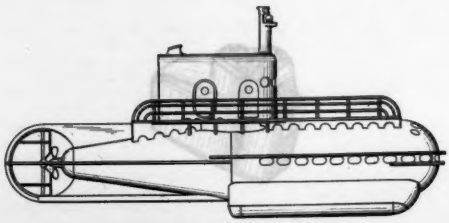
219,890
FONT OF TYPE
Raphael Boguslav, New York, N.Y., assignor to Tyco Laboratories, Inc., Waltham, Mass., a corporation of Massachusetts
Filed Sept. 23, 1969, Ser. No. 19,257
Term of patent 14 years
Int. Cl. D18—*04*
U.S. Cl. D64—12



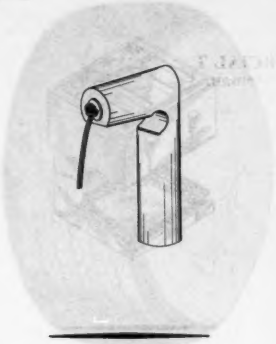
219,891
BOAT
William A. Cargile, 101 Jocelyn Hills Road, Nashville, Tenn. 37205
Filed Sept. 9, 1969, Ser. No. 19,069
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D71—1



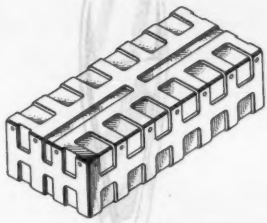
219,892
SUBMARINE
Edmund Stanley Martine, Savannah, Ga. (2835 David Lane, Medford, Oreg. 97535)
Filed Oct. 24, 1969, Ser. No. 19,719
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D71—1



219,893
RESILIENT EXPANDED PLASTIC BOAT FENDER OR THE LIKE
Jack L. Simpton, 4632 Redwood Ave., and Robert E. Seitz, 5228 Emory Circle, both of Jacksonville, Fla. 32207
Filed Nov. 5, 1969, Ser. No. 19,947
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D71—1

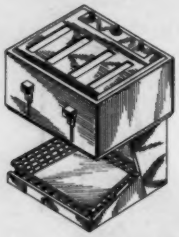


219,894
MARINE FLOAT
Thomas L. Thompson, 310 Fernando, Apt. 102, Balboa, Calif. 92661
Filed Jan. 19, 1970, Ser. No. 20,993
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D71—1



219,895
DISPLAY STAND
Raymond Loewy, Paris, France, assignor to Stanley Edward Matthews, London, England
Filed July 28, 1969, Ser. No. 18,434
Claims priority, application Great Britain Feb. 21, 1969
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D80—11

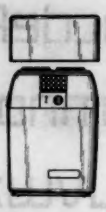
219,896
COMMERCIAL TOASTER FOR RESTAURANTS
Manfred Hegeman, Nyack, N.Y., assignor to Calmac Manufacturing Corporation, Englewood, N.J.
Filed Jan. 12, 1970, Ser. No. 20,866
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D81—10



219,897
SHEATH
Clayton A. Laughlin, Minneapolis, Minn., assignor to Arthur Salm Inc., Chicago, Ill., a corporation of Illinois
Filed June 20, 1969, Ser. No. 17,792
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1

219,898
COCKTAIL SHAKER
Thomas E. Buckley, 25 Lawrence St., Norfolk, Mass. 02056
Filed Nov. 27, 1968, Ser. No. 15,305
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D94—3

219,899
BATTERY-POWERED SHAVER
Maarten Willem van Lelyveld, Drachten, Netherlands, assignor to United States Philips Corporation
Filed July 24, 1969, Ser. No. 18,386
Claims priority, application Switzerland Mar. 4, 1969
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3



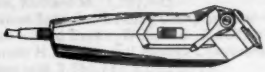
219,900
ELECTRIC SHAVER
Maarten Willem van Lelyveld, Drachten, Netherlands, assignor to United States Philips Corporation
Filed June 24, 1969, Ser. No. 17,845
Claims priority, application Switzerland Dec. 27, 1968
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3

219,901
ELECTRIC SHAVER
Maarten Willem van Lelyveld, Drachten, Netherlands, assignor to United States Philips Corporation
Filed June 24, 1967, Ser. No. 17,846
Claims priority, application Switzerland Dec. 27, 1968
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3

219,902
ELECTRIC HAIR CLIPPER

William M. Walton and John F. Wahl, Sterling, Ill., assignors to Wahl Clipper Corporation, Sterling, Ill., a corporation of Illinois

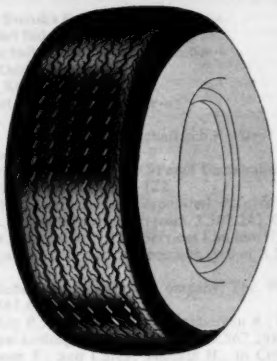
Filed Oct. 15, 1969, Ser. No. 19,582
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3



219,903
TIRE

Robert W. Floyd, Atwater, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y., a corporation of New York

Filed Nov. 24, 1969, Ser. No. 20,259
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—20



319,902

ELECTRIC HAIR CLIPPER

William M. Walton and John P. Wahl, Sterling, Ill., assignors to Wahl Clipper Corporation, Sterling, Ill., a corporation of Illinois

Filed Oct. 15, 1969, Ser. No. 19,282

Term of patent 14 years

Int. Cl. B26b—05

U.S. Cl. D28—19

319,903

TIRE

Robert W. Floyd, Atwater, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y., a corporation of New York

Filed Nov. 24, 1969, Ser. No. 28,259

Term of patent 14 years

Int. Cl. D12—19

U.S. Cl. D99—10

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TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF FEBRUARY, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Abbott, Harold W.; and Claynoweth, William R., to General Electric Company. Apparatus for positioning magnetic record member. 3,562,727, Cl. 340-174.1

Abbott Laboratories: *See—*
Katerndahl, Dean R.; Earl, Robert P.; Evans, Gary D.; and Chittenden, Richard M., 3,561,445.

ABC Decoration Sales and Leasing Company: *See—*
Rost, Lee F.; and Taylor, William H., 3,562,064.

Abdella, Harold H., to General Motors Corporation. Spark plug conductive glass seal. 3,562,187, Cl. 252-513.

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Dye, Silas Owen, 3,561,736.
O'Leary, Walter E., 3,561,369.

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Achermann, Werner; and Achermann, Franz, 3,561,892.

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Acorn Anodising Company Limited: *See—*
Kape, James M.; and Hannaby, William B., 3,562,121.

Adams, Albert A.; and Giegerich, James E., to Certain-Teed Products Corporation. Shingle handling apparatus. 3,562,070, Cl. 156-560.

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Adams, William J., Jr., to FMC Corporation. Seed capsule and method of making same. 3,561,159, Cl. 47-57.6

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Admiral Corporation: *See—*
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AEG-Elotherm G.m.b.H.: *See—*
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A.G. Fur Industrielle Elektronik Agie Losone B. Locarno: *See—*
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Agro, Ignatius T.; and Chiusolo, Louis L., 1/3 to Cassaro, Charles A. Building component. 3,561,177, Cl. 52-173.

Agua Klear, Inc.: *See—*
Kilburn, Robert W., 3,561,945.

Agway, Inc.: *See—*
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Ahrons, Richard W., to RCA Corporation. Memory protecting circuit. 3,562,555, Cl. 307-238.

Air Cushion Vehicles Australasia Pty. Ltd.: *See—*
Ford, Alfred J., 3,561,560.

Air Reduction Company, Incorporated: *See—*
Smith, Hugh R., Jr., 3,562,002.

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Ajem Laboratories, Inc.: *See—*
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Mitsuishi, Tomokuni; Akiyama, Seikichi; Ashida, Sakichi; and Futaki, Hisao, 3,562,188.

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Aktiebolaget Svenska Kullagerfabriken: *See—*
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Aktiengesellschaft Brown, Boveri & Cie: *See—*
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Wagner, Karl-Heinz, 3,561,797.

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Wolf, Konrad, 3,562,446.

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Allan, Barry D.; Croomes, Edgar F.; and Wharton, Walter W., to United States of America, Army. Desensitization of difluoroaminosubstituted propellant compounds using dinitrogen tetraoxide. 3,562,035, Cl. 149-74.

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Dupuis, Hubert, 3,561,170.
Goglio, James J.; and Miller, Clarence L., Jr., 3,562,029.
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Allen, Donn W. Fuel storage cell. 3,561,639, Cl. 220-88.

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Stephens, Frederick J., 3,561,060.

Allen, Laird R., Jr., to Westinghouse Electric Corporation. Self-adjusting electrohydraulic brake control. 3,561,573, Cl. 188-171.

Allen, Paul E.: *See—*
Honkonen, Richard A.; Allen, Paul E.; Way, Richard K.; and Larime, Carl M., 3,562,630.

Allen, Robert K.; Clement, John L.; and Markant, Henry P., to Babcock & Wilcox Company, The. Waste sulphite liquor recovery. 3,561,922, Cl. 23-201.

Allen-Bradley Company: *See—*
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Allied Chemical Corporation: *See—*
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Allied Tube & Conduit Corporation: *See—*
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Alligator Ventilfabrik Gesellschaft mit beschrankter Haftung: *See—*
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Allinquant, Fernand Stanislas. Adjustable hydraulic damper. 3,561,575, Cl. 188-282.

Allis-Chalmers Manufacturing Company: *See—*
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Stikeleather, Larry F.; and Cannon, Craig W., 3,561,789.

Allison, Rudolph L., to Paramount Textile Machinery Company. Semiautomatic toy balloon vending and inflating machine. 3,561,579, Cl. 194-1.

Allmanna Svenska Elecktriska Aktiebolaget: *See—*
Jansen, Juri; and Ryman, Lennart, 3,562,033.

Alphanumeric, Incorporated: *See—*
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Altieri, Renato. Process for preparing a dry compacted detergent composition. 3,562,165, Cl. 252-99.

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Amerace Esna Corporation: *See—*
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Hagihara, Shingo; Ando, Akio; Higashimoto, Akemi; and Hasegawa, Katsumi, 3,561,688.

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Anello, Louis G.; and Sweeney, Richard F., to Allied Chemical Corporation. Novel polysulfates and methods for their preparation. 3,562,310, Cl. 260-457.

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Boettner, Fred E.; and Seidel, Michael C., to Rohm and Haas Company. 1,3-Dialkyl-5-(substituted arylsulfonyl)- tetrahydro-1,3,5-triazine-4-thiones. 3,562,256, Cl. 260-239.7

Boichard, Jacques; Brossard, Bernard Pierre; Gay, Michel Louis Marie Joseph; and Janin, Raymond Marc Clement, to Rhone-Poulenc S.A. Preparation of oxalic acid. 3,562,322, Cl. 260-533.

Bok, Edward. Capillary passage ink remover for vent. 3,561,879, Cl. 401-258.

Bok, Edward. Vent system for stylographic pen. 3,561,880, Cl. 401-258.

Bok, Edward. Stylographic pen with the capillary passage cleaning means operable by hand or by shaking or contact. 3,561,881, Cl. 401-258.

Bonadio, George A. Three dimentional antenna system. 3,562,755, Cl. 343-853.

Boone, Charles J.: *See—*
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Borchardt, Gerald N.: *See—*
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Borg-Warner Corporation: *See—*
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Puder, Allen T., 3,561,109.
Shiber, Samuel, 3,561,213.

Borganti, Augusto, to Montecatini Edison S.p.A. Machine for lapping elements obtained from crystalline materials, and particularly semiconductor crystals. 3,561,167, Cl. 51-161.

Borkowski, Walter L.; and van Venrooy, John J., to Sun Oil Company. Preparation of oxygenated hydrocarbons. 3,562,321, Cl. 260-533.

Bornscheuer, Friedrich W., to Demag Aktiengesellschaft. Support arrangement for metallurgical vessel. 3,561,709, Cl. 248-141.

Boronkay, Attila D.; and Matthews, Kenneth V., to Beckman Instruments, Inc. Radiant energy analyzer including means for offsetting and scaling the ratio of two signals. 3,561,845, Cl. 356-205.

Borschers, Alwin, to Danfoss A/S. Magnetic valve incorporating a flat armature. 3,562,686, Cl. 335-279.

Borucki, James S.; and Graham, Bruce C., to Magnaflux Corporation. Water soluble developer. 3,561,262, Cl. 73-104.

Bos, Jules; Koorneef, Jacob; and Walther, George Ludwig, to U.S. Philips Corporation, mesne. Composite recording/play back head with two trim erase heads oriented at an angle to the record/playback head. 3,562,443, Cl. 179-100.2

Bosold, Leonard R., to Republic Steel Corporation. Continuous casting apparatus including starter bar with quick disconnect sections. 3,561,522, Cl. 164-274.

Boucher, Raymond Marcel Gut, to Bio-Logics, Inc., mesne. Ultrasonic drug nebulizer. 3,561,444, Cl. 128-194.

Boudreau, Paul E.: *See—*
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Bould, Fred, to Westinghouse Electric Corporation. Metal-enclosed switchgear with vertically disposed conductors. 3,562,593, Cl. 317-103.

Bould, Fred; and Hauser, Richard, to Westinghouse Electric Corporation. Circuit interrupter with improved contact structure. 3,562,459, Cl. 200-146.

Bouru, Louis Leonard, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Gas purifying device. 3,561,195, Cl. 55-409.

Bousen, Karl-Josef; and Berth, Peter, to Therachemie Chemisch Therapeutische Gesellschaft m.b.H. Oxidation dyes comprising aromatic diamines and coupling components. 3,561,912, Cl. 8-10.2

Bovantes, Jose: *See—*
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Bowen Tools, Inc.: *See—*
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Bowler, Raymond M. Shoe lasting machines. 3,561,028, Cl. 12-12.

Bowman, Clifford G.; and Bowman, Don C. Hand level. 3,561,123, Cl. 33-73.

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Bowser, Robert E.: *See—*
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Cassar, Richard D.; and Boyer, Jackson S.,3,562,210.
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Boyle, Ralph C.; and Paulius, Leonard, to International Harvester Company. Multi-speed independent power take off unit. 3,561,277, Cl. 74-15.4

Boynton, James S.: *See—*
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Boynton, Robert H.; and Boynton, James S. Record players. 3,561,769, Cl. 274-9.

Bradley, Woody. Storage and dispensing system for shopping carts. 3,561,567, Cl. 186-1.

Bragg, Thomas L., Jr., to Honeywell Inc. Connector apparatus. 3,562,798, Cl. 339-17.

Brand, Derek, A. Soap dispensing container. 3,561,650, Cl. 222-518.

Brand, Walter A., Jr., to General Electric Company. Coke oven charging car locating control. 3,562,514, Cl. 246-167.

Branden, Leif: *See—*
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Branden, Leif; and Ryr, Arne Karl, to Telefonaktiebolaget LM Ericsson. Electric contact and base plate assembly. 3,562,699, Cl. 339-220.

Branfield, Henry A., to Dick, A. B., Company. Master controlled copy count method and apparatus. 3,562,491, Cl. 235-61.1

Branfield, Henry A.; and Overington, John P., to Dick, A. B., Company. Disposable ink container with means for expelling the ink therefrom. 3,561,360, Cl. 101-350.

Branson Instruments, Incorporated: *See—*
Jugler, John, 3,561,462.

Braun, Paul E.; and Clarke, James R., to Ford Motor Company. Carburetor with fuel bowl evaporation control means. 3,561,737, Cl. 261-72.

Braxton, Henry G., Jr.; and Lajiness, Evelyn J., to Ethyl Corporation. Method of defoliating plants. 3,561,946, Cl. 71-70.

Braxton, Henry G., Jr.; and Lajiness, Evelyn J., to Ethyl Corporation. Method of defoliating plants. 3,561,947, Cl. 71-70.

Breckenridge, Jack D.; and Schultz, David L. Boat mounted holder for enabling cleaning of fish. 3,561,043, Cl. 17-53.

Breeding, Edwin C.: *See—*
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Brenden, Byron B., to Holotron Corporation. Ultrasonic beam combiner in holography. 3,561,257, Cl. 73-67.5

Bresson, Clarence R.: *See—*
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Bretschneider, Hermann, to U.S. Philips Corporation, mesne. Recording and/or reproducing apparatus with circuit to insert A.C. signal into amplifier to indicate battery condition. 3,562,441, Cl. 179-100.1

Brevets Aero-Mecaniques S. A.: *See—*
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Brevets Aero-Mecaniques S.A.: *See—*
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Brewster, Arthur Edward, to International Standard Electric Corporation. Pattern forming apparatus. 3,562,759, Cl. 346-74.

Bridgeford, Douglas J., to Tee-Pak, Inc. Gas release from cellulose casing by multiple perforations. 3,562,368, Cl. 264-36.

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Baudino, Louis J., Jr.; and Bright, James A.,3,562,552.

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Brinkmann, Christian; and Hermes, Rolf, to Mannesmann-Meer Aktiengesellschaft. Drive system for the matrix and upper die of a power press. 3,561,055, Cl. 18-6.5

Brinser, Lester C. Three dimensional game. 3,561,774, Cl. 273-130.

Brisk, Clyde W.; and Schiller, Adam A., to Waukesha Cutting Tools, Inc. Pulsating coolant adapter. 3,561,299, Cl. 77-55.

British Petroleum Company Limited, The: *See—*
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British Resin Products Limited: *See—*
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British United Shoe Machinery Company Limited, The: *See—*
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Brockway, James E., to Hartwell Corporation. Opposed jaw latch. 3,561,802, Cl. 292-49.

Brode, Gerald D.; Malia, James F.; and Mead, William K., to International Business Machines Corporation. Protection diode for integrated circuit. 3,562,547, Cl. 307-202.

Broekhuysen, William C., to G-V Controls Inc. Automatic telephone dialing apparatus. 3,562,440, Cl. 179-90.

Broemer, Heinz; and Meinert, Norbert, to Leitz, Ernst, G.m.b.H. Borosilicate glass composition. 3,561,986, Cl. 106-53.

Brook, Greville B., to Fulmer Research Institute Limited. Aluminum-base alloys. 3,561,954, Cl. 75-142.

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Brown, Chester Burton: *See—*
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Brown, Dean R., to Outboard Marine Corporation. Positive holding door and window lock. 3,561,804, Cl. 292-58.

Brown, Harold, Company: *See—*
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Butler, Huston V.; Feeler, Tilghman M.; and Peterson, Bernard F., 3,561,535.

Brown, Jacob W., to Vulcan Corporation. Pre-formed shoe insole. 3,561,141, Cl. 36-44.

Brown, John Johnston; Hardy, Robert Allis, Jr.; and Roth, Carol Nora, nee Carol Therese Nora, to American Cyanamid Company. Substituted 7,8-dihydro-6-methoxy-6,14-endo(etheno or ethano)-morphide-7-ketones and N-cycloalkyl- methyl-7,8-dihydro-6-methoxy-6,14-endo(etheno or ethano)norcodide-7-ketones. 3,562,279, Cl. 260-285.

Brown, Martin Granger; and Foster, Edward Graham, to Imperial Chemical Industries Limited. Separation of calcium sulphate hemihydrate by a heated centrifuge. 3,561,930, Cl. 23-293.

Broyles, Robert S. Light operated character generator and display driver. 3,562,582, Cl. 315-153.

Brubaker, Burton D.: *See—*
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Brueder, Marc: *See—*
Guy, Francois; and Brueder, Marc,3,562,375.

Brugman, Bernardus Josephus, to Losinger & Co. A.G. Attachment means for the measuring head of an extensometer. 3,561,124, Cl. 33-125.

Bruning, Armin M., to Westinghouse Electric Corporation. Nonconsumable electrode for electric arc heating and melting and methods. 3,561,029, Cl. 13-18.

Brunner, Rolf H.; and Woodard, Ollie C., to International Business Machines Corporation. Radiation sensitive semiconductor wafer identification system. 3,562,536, Cl. 250-219.

Bryant, Emerson C., to National-Standard Company. Tire building drum having a radially movable intermediate assembly. 3,562,062, Cl. 156-401.

Bryson, Millard C.; Stauffer, Harry C.; and Murphy, James R. Process for producing lubricating oil by hydrogen treatment. 3,562,149, Cl. 208-143.

Buck, James G.: *See—*
Rarey, Kenneth W.; Kennedy, John B., Jr.; Buck, James G.; Javorik, Laszlo J.; and Higgins, Edward D.,3,561,356.

Buckert, Wilfred F.; and Thompson, Frederick L., to Eastman Kodak Company. Boom stop. 3,561,610, Cl. 212-39.

Buckeye Steel Castings Company, The: *See—*
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Bucy, Harry R. Die casting similar molds with accelerated venting means. 3,561,061, Cl. 18-30.

Budd Company, The: *See—*
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Buhr Machine Tool Corporation: *See—*
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Bull, Hans; and Maykemper, Alfred, to Hermon Hemscheidt Maschinenfabrik. Roof-supporting assemblies. 3,561,221, Cl. 61-45.

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Bundschuh, John J., to Eastman Kodak Company. Apparatus for monitoring rewind in a motion picture projector. 3,561,854, Cl. 352-124.

Bunker Hill Company, The: *See—*
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Bunker-Ramo Corporation, The: *See—*
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Burdick, Lester L., Jr. Copying apparatus. 3,561,865, Cl. 355-23.

Burg, Marion, to Du Pont de Nemours, E. I., and Company. Light-sensitive color forming compositions of 9, 10 phenanthrenequinone. 3,561,969, Cl. 96-90.

Burke, Arthur J.: *See—*
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Burke, Clarence A., to Eastman Kodak Company. Method for making rheostats. 3,561,113, Cl. 29-621.

Burke, Edward: *See—*
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Bustin, William M.; and Cook, Harry C., to Esso Research and Engineering Company. Pipeline leak detector. 3,561,256, Cl. 73-40.5

Butler, Claude D.: *See—*
Poe, Ronald L.; Wotring, Robert W., Jr.; and Butler, Claude D.,3,562,343.

Butler, Huston V.; Feeler, Tilghman M.; and Peterson, Bernard F., to Brown, Harold, Company. Apparatus for simultaneously guiding at least two insertable mechanisms in a well tubing. 3,561,528, Cl. 166-117.5

Butler, Huston V.; Feeler, Tilghman M.; and Peterson, Bernard F., to Brown, Harold, Company. Method for simultaneously guiding at least two insertable mechanisms in a well tubing. 3,561,535, Cl. 166-315.

Butter, Karl; and Theiss, Armin, to Messerschmitt-Bolkow Gesellschaft mit Beschrankter Haftung. Form locking mounting for combustion chamber injector. 3,561,898, Cl. 431-167.

Butzko, Robert L. Apparatus for the production of formed articles from plastic sheet material. 3,561,057, Cl. 18-19.

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Byers, James Otto, to Sanders Associates, Inc. Fluid flow control valve. 3,561,488, Cl. 137-625.62

Bykov, Leonid Alexandrovich; Ksenofontov, Albert Grigorievich; and Kolomeitsev, Adolf Petrovich. Tundish for continuous casting machines. 3,561,745, Cl. 266-38.

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Cambridge Memories, Inc.: *See—*
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Camejo, Luis, 1/3 to Bovantes, Jose, and 1/3 to Martines, Orlando. Thermometers. 3,561,271, Cl. 73-371.

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Campagnuolo, Carl J.: *See—*
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Campbell, Darrel: *See—*
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Campbell, David R. Apparatus and method for conveying and elevating substances. 3,561,907, Cl. 417-53.

Campbell, H. Albert: *See—*
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Canada Iron Foundries, Limited: *See—*
Stewart, John Kenneth; and Von Beckman, Helmut R. E., 3,562,419.

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Cannon, Maurice W.; and Tankersley, Jerome B., III, to General Electric Company. Induction heater for rotating godet. 3,562,472, Cl. 219-10.61

Caperton, Charles B. Sewer rodding machine. 3,561,034, Cl. 15-104.3

Caradco Incorporated: *See—*
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Carden, Edward. Anaesthetist's ventilator. 3,561,466, Cl. 137-102.

Care, Guido. Band clips. 3,561,078, Cl. 24-274.

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Carlin, William W.; and Raetzsch, Carl W., to PPG Industries, Inc. Operation of alkali metal chlorine cells. 3,562,123, Cl. 204-99.

Carlini, Dominique, to Recherches et Applications des Plastiques Dans l'Industrie et le Batiment, S.A. Method for forming cylindrical tanks. 3,562,047, Cl. 156-184.

Carlon, Hugh R., to United States of America, Army. Infrared source. 3,562,006, Cl. 117-213.

Carlsen, Harry R.: *See—*
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Carlson, Edgar; Henke, Alfred M.; Lehrian, William R.; McKinney, Joel D.; and Metzger, Kirk J., to Gulf Research & Development Company. Asphaltene hydrodesulfurization with small catalysts particles utilizing a hydrogen quench for the reaction. 3,562,800, Cl. 208-216.

Carlson, Richard G.; and Cannon, Craig W., to Allis-Chalmers Manufacturing Company. Hitch adapter. 3,561,788, Cl. 280-461.

Carmichale, James W., to Haja, Inc. Power attachment unit for golf bag carts. 3,561,555, Cl. 180-11.

Carpino, Ugo, to Pio Guardigli. Measuring of electromotive forces. 3,562,648, Cl. 324-99.

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Carrigan, Tracy, to FMC Corporation. Mirror mounting mechanism for wheel aligning apparatus. 3,561,849, Cl. 350-299.

Carson, Earl G.; and Conger, Ben D., to Electronics Associates, Inc. Checking circuit for stabilized operational amplifiers. 3,562,503, Cl. 235-153.

Carson, William S., to Ashland Company of N. J., Inc. Fruit picker. 3,561,204, Cl. 56-328.

Carter, William A.; and Jensen, Otto, to I-T-E Imperial Corporation. Thermal analog protection for capacitors. 3,562,586, Cl. 317-12.

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Cascade Pole Company: *See—*
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Cash, Richard G.: *See—*
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Cason, Charles M., III; Hutcheson, Guilford J., Jr.; Barr, Thomas A., Jr.; and Hasty, Ether R., to United States of America, Army. Mode and 'O' switch mechanism for gaseous lasers. 3,562,663, Cl. 331-94.5

Cason, Charles M., III; and Perkins, James F., to United States of America, Army. Lidar with automatic scanner having fixed optics. 3,561,869, Cl. 356-4.

Caspari, Frederick W., to Allen-Bradley Company, mesne. Pulse width modulation to amplitude modulation conversion circuit which minimizes the effects of aging and temperature drift. 3,562,673, Cl. 332-31.

Cassaday, Ernest W., to Parker-Hannifin Corporation. Pulse phase modulated servoactuator. 3,561,326, Cl. 91-363.

Cassar, Richard D.; and Boyer, Jackson S., to Sun Oil Company. Alpha-olefin polymers containing polyester stabilizers. 3,562,209, Cl. 260-45.85

Cassar, Richard D.; and Boyer, Jackson S., to Sun Oil Company. Elastomeric composition containing phosphite ester and polyester stabilizers. 3,562,210, Cl. 260-45.85

Cassar, Richard D.; and Boyer, Jackson S., to Sun Oil Company. Plastic surface coverings of improved ultraviolet light stability. 3,562,211, Cl. 260-45.85

Cassaro, Charles A.: *See—*
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Castagna Electronics Corporation: *See—*
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Castagna, John F., to Castagna Electronics Corporation. Phonograph. 3,561,768, Cl. 274-9.

Castedello, William; Gilvar, Stephen G.; and Marquis, Ray L., to Kalart Company, Inc., The. Sound slide projector. 3,561,856, Cl. 353-19.

Caterpillar Mitsubishi Ltd.: *See—*
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Catlin, Francis I.; and Glackin, Robert N., Jr., to John Hopkins University, The. Audiometry training unit. 3,561,138, Cl. 35-13.

Caudle, Ford J.; Foster, Joe S.; Nipp, Bobby K.; Morring, Solon H.; and Smith, Russell T., to United States of America, Army. Remote propellant casting process. 3,562,364, Cl. 264-3.

Cavagnero Erman, V.; and Loftus, Joseph F., to Torrington Manufacturing Company, The. Machine for producing bearings and the like from strip stock. 3,562,473, Cl. 219-64.

Cavitron Corporation: *See—*
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C. A. V. Limited: *See—*
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Cavy, Claude; Rouge, Pierre; and Tissot, Roland. Hermetically-sealed transfer unit. 3,561,826, Cl. 308-36.3

Cederstrand, Carl N.; Davis, James C.; Keenan, Charles A.; and Randall, Jerrold H., to Beckman Instruments, Inc. Non-dispersive IR analyzer and method for calibrating. 3,562,522, Cl. 250-43.5

Celanese Corporation: *See—*
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Celovsky, Michael J., to Industrial Tool Engineering Company. Dies and roll manufacture by electroerosion. 3,562,702, Cl. 219-69.

Center, Warren A. Pistol with means actuating the barrel latch and setting the trigger mechanism and safety. 3,561,149, Cl. 42-41.

Central Mine Equipment Company: *See—*
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Centrifugal Products, Inc.: *See—*
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Century, Bernard A., to Allied Steel & Tractor Products, Inc. Hydraulic vibratory compacter. 3,561,336, Cl. 94-48.

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Hotchkiss, George H., 3,562,734.

Chaimowicz, Jean Claude Adam, to Mining & Chemical Products Ltd. Insulated signal coupler. 3,562,527, Cl. 250-83.

Chaivre, Joseph W., to Towne Robinson Fastener Company. Wheel nuts. 3,561,820, Cl. 301-9.

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Chan, Vincent: *See—*
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Chan, William, to Vapor Corporation. Crew switch for controlling a door operator. 3,561,160, Cl. 49-35.
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Chance, Philip G., to Chance, A. B., Company. Positive switch contact operating mechanism for underground switch. 3,562,454, Cl. 200-67.
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Charbonneau, Allan P.; and Weber, Allan P., to Cutler-Hammer, Inc. Rack and pinion operating means for enclosed circuit disconnect devices with snap action and positive kickoff features. 3,562,463, Cl. 200-153.
Charles, John Alexander, to Monsanto Textiles Limited. Yarn carrier for gripper axminster loom. 3,561,495, Cl. 139-2.
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